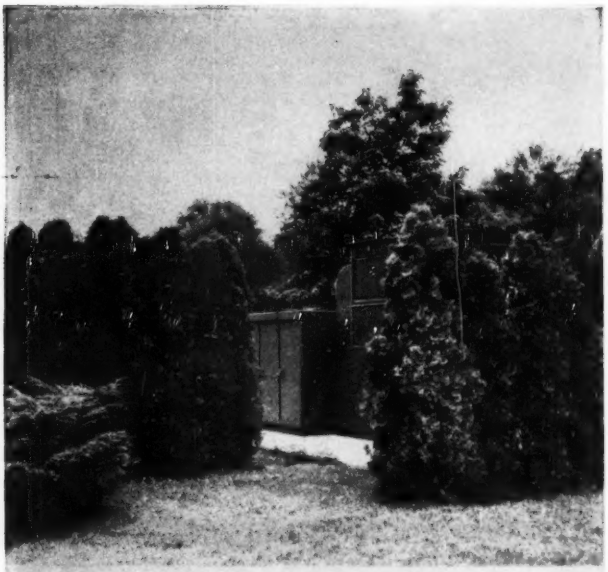
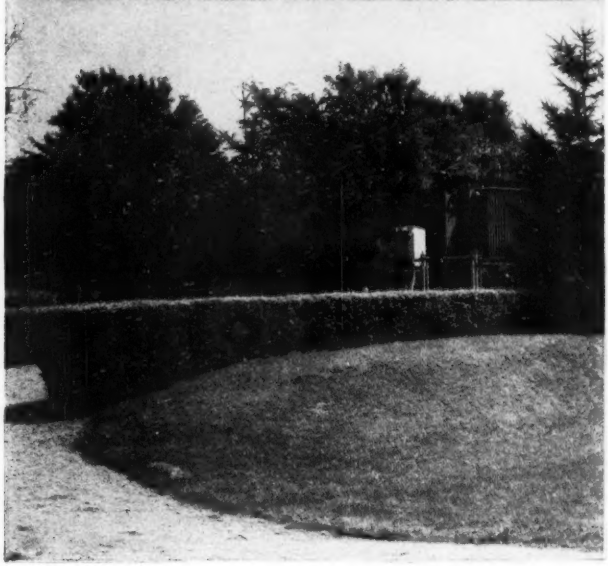
ELECTRICAL WORLD *News Issue*

A McGRAW-HILL PUBLICATION

A. H. Kessler, New President of the International Association of Electrical Leagues





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IN RESIDENTIAL AREAS IS
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THEIR INTEGRATED DESIGN
MAKES THEM EASY TO LANDSCAPE
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G-E ENGINEERING AND SERVICE
(TWO EXAMPLES AT LEFT).
OR WRITE TO . . . .
APPARATUS DEPARTMENT
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GENERAL ELECTRIC

The Electrical Week

The 81st Congress powerwise has been good to Truman. It gave him practically everything he asked except the Columbia Valley Administration and the St. Lawrence Seaway. He may get these next year. All power agencies received record appropriations and TVA got its New Johnsonville Plant . . . The Federal Power Commission has joined the demand for further hydro-power development at Niagara Falls. The stumbling block is the agreement with Canada restricting diversion of Niagara River waters . . . TVA is going to get a lot more capacity, including steam. The money will come from the Atomic Energy Commission which needs additional energy at Oak Ridge . . . And central station output is dropping rapidly as the coal and steel strikes shut down America's industrial plant. Last week output was 2.2% below that of the corresponding week of 1948.

Private power will illuminate future Congressional discussions on public power. Congress has voted to scrap the Capitol's power plant and to buy power from Potomac Electric Power Co.

Securities and Exchange Commission nominees Donald C. Cook and Edward T. McCormick (EW, Oct 22, p 92) will probably receive interim appointments. Failure of the Senate to act was due to the absence of several Senators rather than to opposition to the appointees.

In Connecticut, where 99.5% of all farms are electrified, only 111 are without central station service. The other extreme is North Dakota, where the corresponding figures are 36.4% and 44,186.

With Mon Wallgren safe on the Federal Power Commission by a Senate vote of 47-12, President Truman is looking for a federal job for Leland Olds. It is a safe bet the new job will not require Senate approval.

Engineers estimate that the color television sets being demonstrated before FCC would use about a third to a half more power than present black-and-white sets.

Justice Department is sniffing at non-Communist affidavits filed under the Taft-Hartley Act by officers of left-wing CIO Electrical Workers. UEW chiefs identified as Commies in sworn testimony before the House Un-American Activities Committee are the objects of the scrutiny.

"Grass roots" hearings on the proposed Columbia Valley Administration have been postponed until next year. One reason for the delay: Sen. Dennis Chavez, chairman of the Senate committee studying CVA, went to Europe on another Senatorial junket.

Sales of electrical wholesalers continue to run lower than last year. August sales figures just compiled by the Department of Commerce were 5% over July but 10% under August, 1948. Sales for first eight months of 1949 are 7% below last year.

Add new uses for electricity: A German inventor has developed a new method of catching fish using two electrodes. A positive charge on one electrode would point the fish towards it; then varying the voltage would, the German believes, cause the fish's tail muscles to contract and relax, propelling it into a net near the anode.

Don't get exercised over the change in the Wage-Hour Act making it apply to jobs "directly essential" —instead of "necessary"—to production for commerce. Utility employees previously covered by the law are still under it, according to the Congressional report which accompanied the language change.

Television is being blamed by the Los Angeles Transit Lines for a 25% decrease in nighttime streetcar and bus travel. The transit company claims people are staying home to view sports events. The result is that the company need not send out extra buses and streetcars.

Notes From The News

The steel strike will delay construction work at Clark Hill Dam. Non-delivery of steel spans for a working trestle has forced postponement of concrete pouring . . . Construction workers are back on the job at the Philip Sporn Plant being built by Appalachian Electric Power Co and Ohio Power Co. They had refused to cross a picket line set up by striking United Mine Workers members at a nearby mine . . . Reclamation Commissioner Michael Straus and California Regional Director Richard L. Boke won't get their back pay. The Senate refused to restore the money they lost while out of office under an Interior Appropriation Bill rider . . . Springfield, Ill., Water, Light, and Power Department will supply power for state buildings in the capital.

Truman Gets OK on Power Program

Congress Helps the President Keep Campaign Promises by Approving All of His Requests Except Those for CVA and St. Lawrence Projects, May OK These in '50

BOTH POLICYWISE and in dollars, the first session of the 81st Congress gave Harry Truman as much, or more, for federal power as for any of his major domestic programs. And Congress virtually promised more and faster power expansion would be forthcoming in the session starting next January.

In last year's election campaign, the President finally embraced the full power program of his predecessor in the White House. Specifically, he promised the West more transmission lines, as well as hydro generating capacity; the South, a new steam plant for the Tennessee Valley Authority; the North, federal construction of the St. Lawrence Seaway and Power Project. Subsequently, he sponsored creation of a new valley authority, the proposed Columbia Valley Administration.

Gained First Two Ends

During the Congressional session ended last week he won the first two of these objectives. Congress guaranteed him it would take another, longer look at CVA next year. It said "no" only to the St. Lawrence project.

Outside these two possibly temporary reverses, the President's only setback at the hands of Congress in the power field was the Senate's rejection of Leland Olds' renomination to the Federal Power Commission. The Interior Department, which calls Administration signals on power, failed in a comparatively mild fight for a steam generating plant in California. But that battle too is not yet over.

Positive Steps Taken

As against these few negative actions, Congress took the following positive steps to speed federal power programs:

1. Voted record—more than $1.7-billion—appropriations for power and power-related agencies. This staggering total included all regular and deficiency appropriations, contract authority and loan funds allotted federal agencies which build, transmit, sell, finance, or regulate power. Not all of it, of course, will go for strictly power purposes.

2. Approved funds for TVA's New Johnsonville steam generating plant, the first peacetime, non-emergency thermal station planned and built by the federal government. At the same time, Congress apparently gave TVA sole responsibility for providing the energy needs of the area—without defining the boundaries of the same.

3. Revived Interior's money-starved Southwestern Power Administration with funds for construction of additional transmission facilities. Another Interior activity, a Southeastern power marketing unit for Walton Seymour's Division of Power, was established by the same appropriation bill. This unit, authorized to plan sales of power from Army-built hydro plants in the Southeast, already is being called a Southeastern Power Administration by those versed in Interior power policies.

All the larger power spending and lending agencies chalked up new record appropriations. The federal dam builders and operators received more than $1 billion—$673 million for the Army Engineers, $372.9 million for the Bureau of Reclamation.

Rural Electrification Administration received its largest loan fund in history. The actual total of $500 million consisted of a basic fund of $350 million and an additional $150 million to become available if needed. REA also received $6 million for administration.

As the session ended, Congress put REA into the rural telephone business, after a long debate. A special appropriation provided $25 million in loan funds and $250,000 for administrative expenses for the new program.

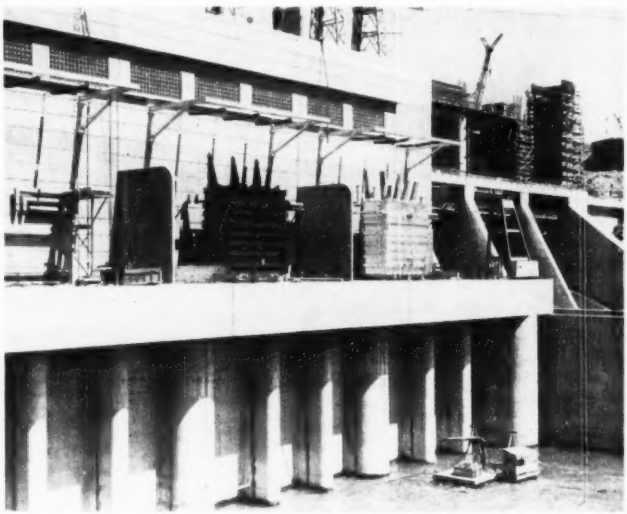
Some of the huge fund totals represented rising costs. But, in the main, they simply spelled broader activties in power and other fields by major federal construction agencies.

But several policy decisions of broad significance were cloaked in unimpressive appropriations. For example, the bitter scrap over TVA's New Johnsonville steam plant ended with a grant of $2.5 million to start construction. An interesting aftermath of this fight

Agency Appropriations
(Fiscal 1950)

Army Engineers	673.0*
Rural Electrification Administration	531.3
Bureau of Reclamation	372.9
Other Interior Power Agencies (BPA, SPA, Southeastern)	62.9
Tennessee Valley Authority	52.2
Securities and Exchange Commission	5.7
Federal Power Commission	4.0
Total	1,702.0

*In millions of dollars



POWER PLANT at Keswick Dam, where the first of three 25,000-kw units has gone on line. Other two are to follow soon. This project is being built by the Bureau of Reclamation. It is part of California's Central Valley Project and is on the Sacramento River

was the recent report that the Atomic Energy Commission would seek new steam plants to support its operations in the Tennessee Valley.

In another major policy move, the Southwestern Power Administration received $4 million in cash and $5 million in contract authority for transmission. This followed a bitter debate on the issue of private vs federal transmission of energy from federal hydro plants.

SPA Administrator Douglas Wright, armed with $9 million, is now discussing possible wheeling agreements with officials of Southwestern power companies. He is doing so at the demand of several Senators. But where no agreement is reached, SPA can build transmission facilities.

A relatively tiny appropriation of $70,000 put the Interior Department into the power business in the Southeast. With this sum a staff is being organized to sell energy from plants built by the Army Engineers in the vast area bounded on the west by the Mississippi and on the north by Pennsylvania.

Only important loss sustained by federal power proponents was the rejection of the nomination of Leland Olds to a third five-year term on the Federal Power Commission. But the approval of Ex-Gov Mon C. Wallgren for the same job puts an ardent advocate of CVA and other public power projects on the Commission.

The Democratic leadership of Congress, at least, is driving for an even more significant record on public power. Before going into the 1950 elections, it wants to add large pieces of that record.

Among the power matters that fit into this concept and, therefore, are slated for early action, is the $1-billion omnibus Rivers and Harbors Bill, which passed the House this year. A revised and expanded version approved in a Senate committee will get attention next year. Hearings on CVA, planned for the Northwest this fall, have been postponed until January. But continuing Administration pressure will bring CVA to a decision.

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Extend Iowa Franchise

Voters of Westphalia, Ia., have approved a 25-year renewal of Iowa Public Service Co's franchise.

FPC Urges Further Development of Hydro Power from Niagara Falls

FEDERAL POWER Commission has added its weight to demands for further development of hydroelectric power at Niagara Falls. But actual construction of new power plants in the area probably will have to await a new U. S.-Canadian agreement on diversion of the Niagara River's waters.

An FPC report made public last week (Oct 19) urged early redevelopment on the U. S. side of the Falls to increase power capacity from the present 440,000 kw. to 1,572,000 kw. This plan, involving retirement to stand-by status of one existing plant and construction of two others, would cost from $308 million to $350 million, FPC estimated. The spread in costs arose out of the possibility that either covered canals or more expensive tunnels might be used to divert water to the new plants.

But FPC based its findings on current international agreements as to diversion of Niagara water and power interchange accords. Starting with the International Boundary Waters Treaty of 1909, these compacts have been amended, especially during the war period, almost beyond recognition. Thus, "selection of a final, over-all plan for redevelopment for power . . . is not advisable until the total diversions of water for power purposes are permanently authorized and any restrictions . . . agreed upon," FPC concluded.

The increase in power production, from the present 3.7 billion kwh to 11.6 billion kwh as contemplated, could be utilized as soon as it became available. By 1960, end of the estimated construction period, the energy could be absorbed, either entirely within central and western New York or in that area and adjacent sections of Pennsylvania and Ohio.

The report noted that the New York Power Authority had advised FPC of its desire for public redevelopment of the Niagara, to be coordinated with the St. Lawrence Seaway and Power Project. The Commission also recognized the Niagara Falls Power Co's proposal to expand its existing plants at the site.

Though it came up with no solution for these conflicting bids for private and public construction, FPC cited comparative cost estimates for both types of financing. Average cost per kwh would amount to 2.08 mills with public financing and 5.57 mills with private financing if diversion canals were used. Construction of tunnels would raise the cost per kwh to 2.30 mills under public financing and 6.22 mills with private financing. Both estimates were for power delivered at load centers within New York State.

The FPC plan called for coordination of Niagara Falls Power's Schoellkopf plant, with its 365,000-kw capacity, with the new projects. The company's 80,000-kw Adams plant would be used only for voltage regulation or in a "grave emergency."

The new facilities would include a unit with diversion works in the Niagara below the Schoellkopf tailrace and a tunnel serving 120,000 kw of capacity in a plant at Lewiston, an intake near Conners Island serving 1,080,000 kw of capacity in the Lewiston plant, and a pump storage unit near Lewiston with a capacity of 130,000 kw.

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BPA Transmission Line Put in Service in Oregon

With completion of the last link in the Bonneville Power Administration's Albany-Detroit transmission line in Oregon, power has begun to flow to the site of Detroit Dam, under construction on the North Santiam River.

Contracts for transmission of the power have been negotiated between the Benton-Lincoln cooperative, the Corps of Engineers, and Consolidated Builders, contractors for construction of the dam.

Delivery of power is initially only 700 kw, but it will be increased to 2,500 kw in December and probably to 4,000 next year, as dam construction advances.

Another new Oregon power link, just completed, provides additional power to the Portland area. It is a 13-mile, 57-kv transmission line from Bonneville's Troutdale station to Portland General Electric Co's Lents substation in East Portland. The line provides the seventh electrical tie between the PGE system and the Bonneville power grid.

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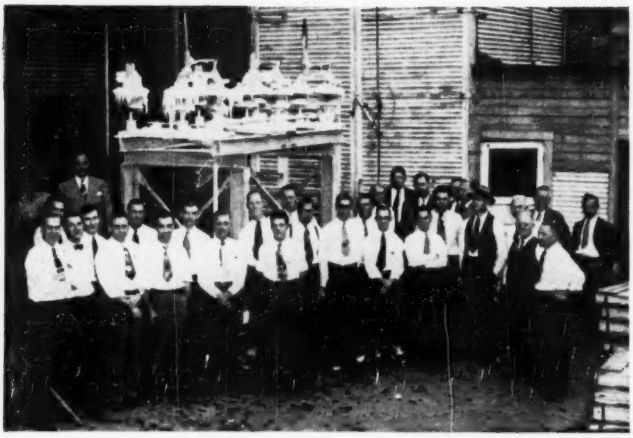

ICE-COVERED air break switches furnish an unusual background for shirt-sleeved members of the PEA Transmission and Distribution Committee. The ice formed on the breakers while they were kept in a large refrigerator at the Greensburg Plant of the Railway & Industrial Engineering Co. The Committee witnessed opening and closing tests on the breakers

Trend Towards Socialized Industry Can Be Stopped, Fitch Tells PEA

ELECTRIC UTILITIES can stop the trend toward a socialized industry by doing a better job than government agencies of supplying power to all customers. This was emphasized by H. S. Fitch, president of Pennsylvania Electric Association, in a talk delivered at the meeting of the Transmission and Distribution Committee last week at Ligonier.

To do this better job, Fitch, who is the vice-president of West Penn Power Co. pointed out that standardization of equipment by utilities and manufacturers must be carried still further, adding that the present lack of uniformity in equipment is one of the selling points used by those who are fanatical about government ownership. He stressed the idea that new customers connected to the line be given attention through public relations and newspapers, rather than merely being put on company records. It is also important that these new customers be helped with their problems of applying power.

In an analysis of distribution system costs, D. K. Blake, General Electric Co, said the greater portion of distribution costs today is due to short laterals rather than new feeders themselves. Engineering analyses, of themselves, will not lower costs. Utilities must turn their attention to those employees who actually design and construct these additions if they are to attain their objective of "more kwhr for more people at less cost."

A method of aerial surveying for transmission line construction which halved costs and cut time required for the survey was presented by G. B. Hoffman, civil engineer of West Penn Power Co. Because of the rugged terrain of western Pennsylvania, he said, his company found it necessary to make the preliminary survey by aircraft. Hoffman explained that aerial photographs, taken after center lines had been staked in, were then used in a device known as a Kelsh plotter to obtain an absolute profile with 10-ft contour lines, which had a guaranteed accuracy of ± 5 ft. This profile was checked by line of levels at several locations and was found to be within specified limits of accuracy, Hoffman concluded.

Reporting on the design of steel transmission towers, E. J. Straubitz, manager of Tower Department, Blaw-Knox Co, said that requirements of present-day transmission towers are substantially greater than those existing prior to 1920. Higher voltages, larger conductors, longer spans and more conservative design have contributed to the increase in the average weight of suspension towers. Consequently, costs have increased to a point where power companies are giving more thought to possible methods and design assumptions that will reduce costs.

More Capacity for TVA; AEC to Furnish Funds

New generating capacity for TVA, including a second steam plant, possible additional units for New Johnsonville, and perhaps new hydroelectric plants, is part of the U. S. Atomic Energy Commission's stepped-up production program.

AEC said this week that $50 million of its announced three-year, $300-million expansion program is earmarked for power expansion at TVA to meet new needs at Oak Ridge. Washington speculation placed the ultimate cost of the expansion at nearer $1 billion, with TVA's share in the neghborhood of $100 million.

Rep James B. Frazier, Jr., Tennessee Democrat, disclosed that the new steam plant, comparable to the $54-million New Johnsonville plant, is planned in the Chattanooga area, near Hale's bar.

In addition to the increased power demands from Oak Ridge's atomic production plant, there are indications that the TVA area may be the site of the new Air Engineering Development Center which Congress has authorized. Although no site has been announced, the Tennessee Valley has been termed the favored location by a Defense Department spokesman. Heart of AEDC would be faster-than-sound wind tunnels, with estimated power requirements for a single tunnel as high as 375,000 kw, the presently planned capacity of the New Johnsonville Plant.

Information on the new expansion of TVA came from behind closed doors of a House Appropriations subcommittee hearing Oct 19. At the hearing AEC and TVA officials discussed power needs of the new atomic program. First word of the AEC program had come the previous day, when Congress amended some restrictions it had imposed earlier this session on AEC spending.

First funds for the new production program are now being allocated from AEC's emergency funds. President Truman is expected to ask Congress for more appropriations in January.

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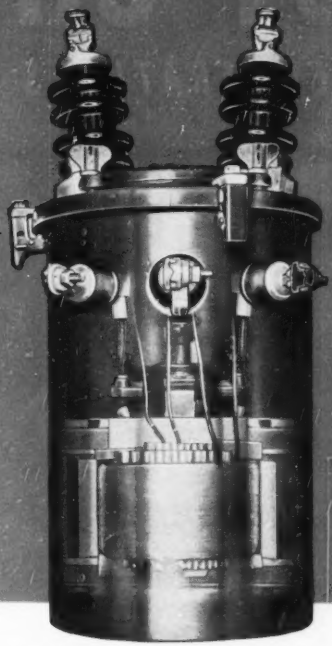
Wage Increase Granted

A general wage increase of approximately 8% was granted Florida Power Corp employees in the new contract with AFL-IBEW, effective Sept 26. Other changes from the old agreement were minor. Proposed revisions in the employees' retirement plant will be recommended to the board of directors and the next annual stockholders' meeting for approval.

MOLONEY *HiperCore* DISTRIBUTION TRANSFORMERS



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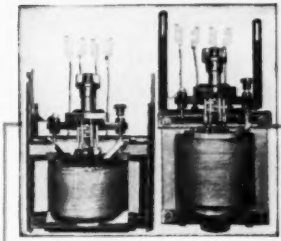

HiperCore core-and-coil unit and conventional type core-and-coil unit. Both are rated 3 Kva, 12470 Gr. Y/7200-120/240 volts. Smaller size of HiperCore unit achieved by use of wound cores made of high permeability, oriented, silicon steel.

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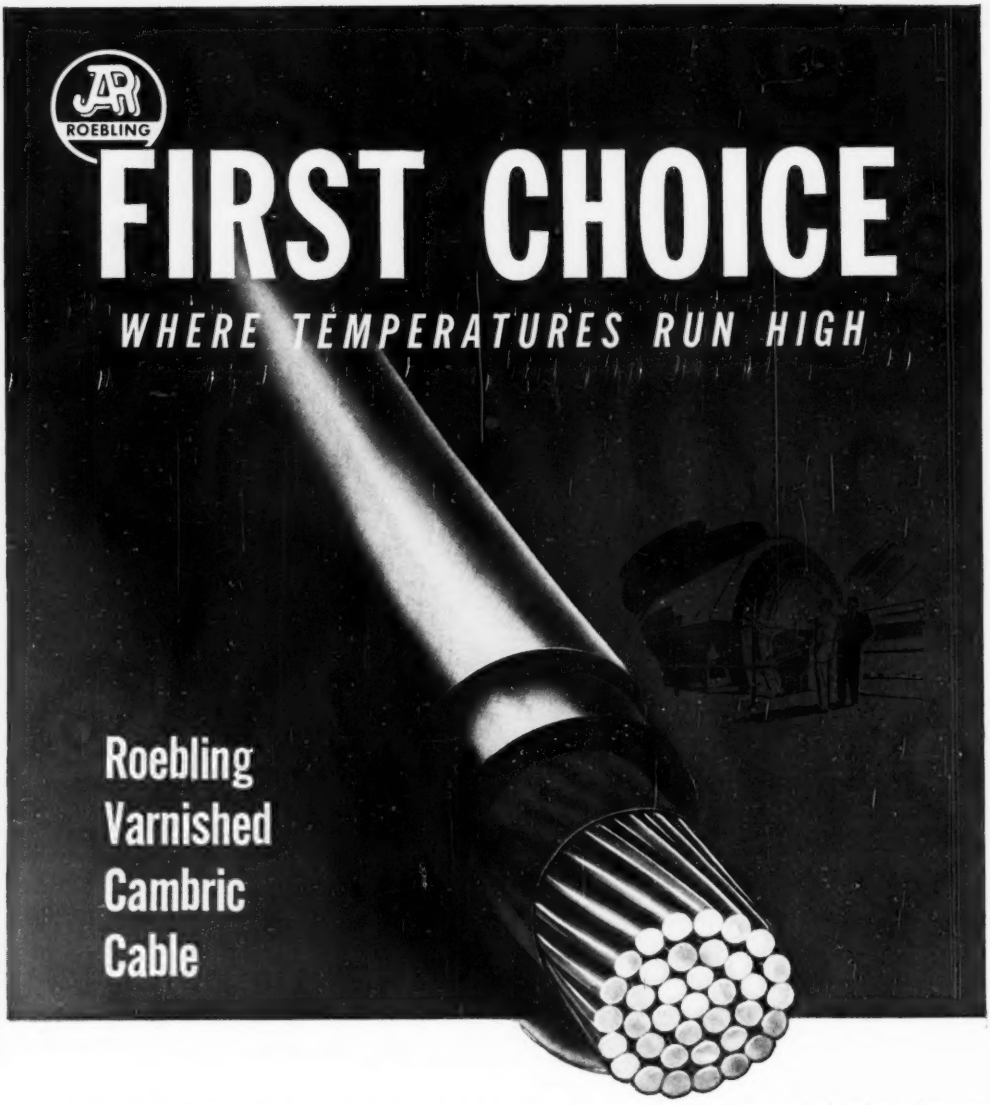

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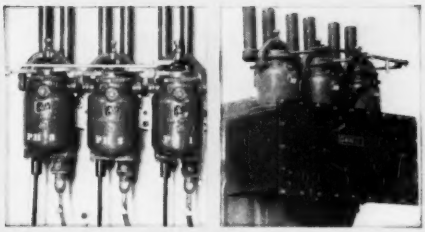
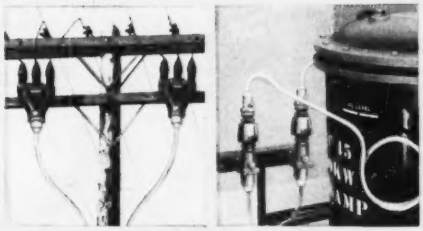


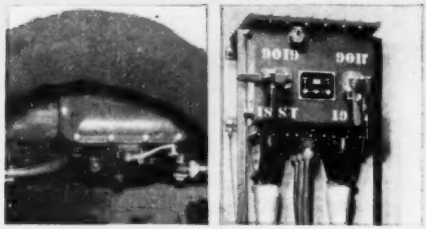
OIL FUSE CUTOUTS

G & W Type "FC" oil fuse cutouts are used for fusing and switching of primary circuits in subway, vault and overhead installations. The gang operating mechanism provides for load break three-phase sectionalizing. The fuse gives overload and short circuit protection. Within the limits of their short circuit interrupting capacity, oil fuse cutouts often can be applied to locations which do not require the more expensive oil circuit breakers. The heavy all steel housing confines the fuse arc, providing safety from fire. The sealed construction is submersion proof. Cutouts are used as separate units for single conductor cables or mounted on welded steel boxes which enclose connections to multiple conductor cables.



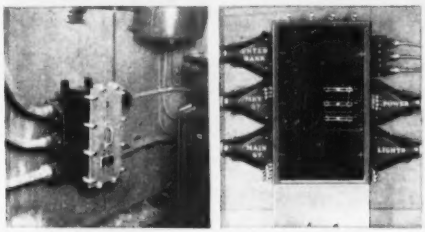
DISCONNECTING POTHEADS

G & W Type "ES" potheads protect cable ends . . . provide a convenient, economical means for disconnecting cables from overhead wires. Non-load break, they are ordinarily limited to operating voltages up to 7500. They are applied to cable systems, where installation conditions permit, as an inexpensive means for sectionalizing cables; for disconnecting branches from through runs and for isolating transformers. By simply shifting the interchangeable plug caps, single phase branch loads can be balanced on a three-phase main. Gang operating mechanism is available for increased usefulness as a three-phase cable end disconnect.



OIL SWITCHES

For safe, speedy sectionalization of cable circuits install load break subway oil switches. If cable trouble occurs, sections can be isolated quickly and circuits re-routed to restore service in the area affected. Load break disconnection is accomplished by manual (or automatic) operation of an external lever—without opening the tank or breaking the seal. While some operators still prefer separate unit, single throw oil switches, G & W Type "RA" multiple circuit oil switches combining standardized unit parts are solving many sectionalizing problems. Their simple, sturdy design requires minimum maintenance. A definite trend toward their use is indicated as they save space and provide system flexibility in a simple, economical manner.



CABLE BOXES

Similar to the manner in which pole top disconnects came into use on overhead systems, disconnecting link subway cable boxes were an early development for sectionalizing underground cables. High voltage link boxes are of two general classes—AIR FILLED for voltages up to 7500 and OIL FILLED for higher voltages. To operate the links in subway cable boxes, circuits must be de-energized, gasketed covers removed, links individually removed or inserted and the cover replaced. Boxes should be tested for air and water tightness after each opening of them. Economic considerations justify the use of cable boxes when the frequency and time required for operation of links is not an important factor.

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2991-H

Ohio Brass MANSFIELD, OHIO

J. E. LOISEAU, president, Public Service Co of Colorado, provides some leverage for erection of the first steel for main building of the company's new Arapahoe steam plant in Denver. The first of two 40,000-kw units is scheduled to go on the line by May, 1950

Load Pick-Up Becoming Harder, PEA Agrees

Relay and protection problems involved in "picking up" the load on distribution circuits after sustained interruptions occupied a substantial portion of the program of the Pennsylvania Electric Association Relay Committee at Allentown, Oct 13-14. Discussers agreed that the problems are becoming more difficult as the concentration of automatic motors, mostly refrigerators, increases.

H. H. Greene, Pennsylvania Power & Light Co, said that present thinking in his company is that standard induction relays should be replaced with very inverse relays on circuits where the heavy motor inrush currents cannot be handled with standard 00-type relays with time settings of the order of 0.4 second at 10 times relay pick-up. However, Greene warned, whenever either of these courses become necessary to handle load pick-up, poorer line protection will result.

R. S. Smithley said that Duquesne Light Co has experienced the problem of picking up a loaded circuit at least eight times since 1941. In four cases circuits involved had to be sectionalized and picked up piecemeal. While the use of CO low-energy inverse relays on 4-kv circuits appears to be in the right direction, Smithley noted that the operating times of such relays, from 100 to 150% of pick-up, are still too short to lie wholly above some inrush curves.

R. E. Cordray and A. J. McConnell, General Electric Co, discussed the operation and application of a new extremely inverse relay that has been specially designed to meet the problem of picking up loaded distribution circuits. They cited test experience with the relay on the system of the New York Power & Light Co as reported in ELECTRICAL WORLD Sept 10 and 24.

Other papers before the relay group included one on the protective relaying of Sewaren Station by L. W. Marts and Jay Fain, Public Service Electric and Gas Co, Newark, and a similar paper on relaying features of Riverton Station by Charles Morrison, South Penn Power Co. H. Denmead, West Penn Power Co, discussed the testing of relays with current transformer secondaries connected.

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More Weather Warnings Will Come from WWV

Disturbance warning services will be extended beginning Nov 1 by the National Bureau of Standards' Central Radio Propagation Laboratory. The service, over Station WWV, will add a new category of propagation conditions primarily affecting the North Atlantic radio circuits.

The letter "U" will be used to warn of an unstable condition in the ionosphere which often occurs as major disturbances subside. Under these conditions satisfactory reception of high-power transmitting equipment but poor results from mobile and low-power short-wave stations may be expected.

Station WWV has previously given warning "W" when disturbed conditions were present or expected within 12 hours. Normal conditions have been indicated by "N." The signals are sent in international Morse code at 19 and 49 minutes past each hour.

Improvement in System Operation Discussed

Improved methods of phasing lines, controlling power factor, and identifying transmission lines were given careful attention by the Systems Operation Committee of the Pennsylvania Electric Association at its meeting last week at Blakeslee.

A subcommittee on transmission nomenclature reported that 90% of the companies were satisfied with existing numbering systems. There appears to be no best or universal system which is worth the cost of adoption.

Looking ahead to problems of importance for future discussion, the Committee felt that publicity regarding hazards from power lines was of great importance. Use of metal ladders and location of television antennae were listed as being possible causes of accidents unless great care is exercised. Other suggestions included reduction of operating errors or mistake prevention, effects of variations in power factor because of air-conditioning loads, selection and training of power dispatchers, and restoration of service on 4-kv networks.

•

Sales of Energy in June Advance 3.1% over '48

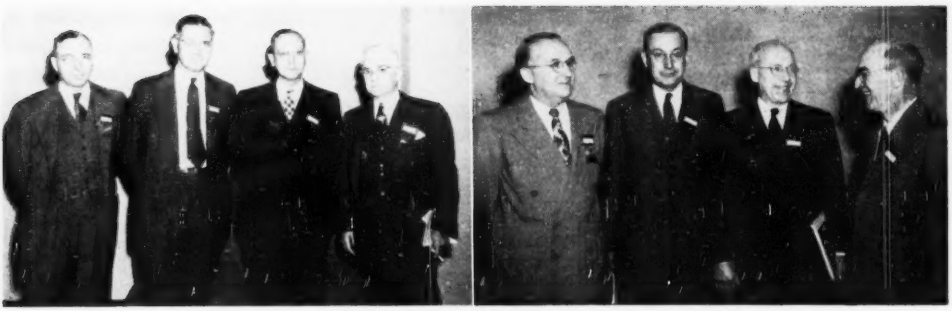
Sales of electric energy to ultimate customers in June totaled 19,904,101,000 kwhr, Edison Electric Institute reports. This was a 3.1% increase over the 19,297,128,000 kwhr sold in June, 1948.

Revenues from ultimate customers amounted to $371,446,400 in June, an increase of 7.7% over the $345,022,800 reported for June, 1948.

For the 12 months ended June 30, the average use per residential customer increased to 1,625 kwhr, an 8.0% increase from the 1,505 kwhr of the previous year; the average annual bill to $48.43 from $45.60, an increase of 6.2%. Revenue per kwhr dropped to 2.98¢ from 3.03¢.

Classification of Sales, June

Kilowatthour Sales June	Million 1949	Kwhr 1948	Per cent Change
Residential or domestic..	4,375	3,815	+14.7
Rural (Distinct rural rates)	664	510	+30.3
Commercial or industrial			
Small light & power....	3,759	3,482	+ 7.9
Large light & power....	9,888	10,261	− 3.6
Street & highway lighting	178	164	+ 8.9
Other public authorities..	522	499	+ 4.7
Railways and railroads			
Street and interurban..	285	310	− 8.0
Electrified steam railroads	188	204	− 7.7
Interdepartmental	46	53	−14.1
Total to ult cust.....	19,904	19,297	+ 3.1



DIVERSIFIED program of AIEE Fall meeting drew representatives of diversified electrical industries. In left panel, left to right, are D. T. Michael, Cincinnati Gas & Electric Co; J. L. Callahan, Radio Corp of America and vice-president of District 3, AIEE; J. F. Fairman, Consolidated Edison Co of New York, national AIEE president; and E. S. Fields, Cincinnati G&E. In right panel: E. W. Seeger, Cutler-Hammer, Inc; E. P. Yerkes, Bell Telephone Co of Pennsylvania; C. Lynn, Westinghouse Electric Corp; and F. W. Cramer, Carnegie-Illinois Steel Corp

Engineering Problems of Utilities Discussed at AIEE Fall Meeting

SOME $2\frac{1}{2}$ MILLS were lopped off the delivered cost of energy on a 400-Mw power system and 39% of the annual fuel bill saved by choosing optimum combinations of incremental loading of the 8 plants in conjunction with minimized transmission losses. This was reported in a paper at the Fall General Meeting of the American Institute of Electrical Engineers at Cincinnati, Oct. 17-21.

Other major sessions dealt with refinement of the probability procedures for determining system reserves, reliability merits of boiler-header station designs, guides for grounding, fault neutralizer application and shunt capacitor operation, and protection and symposia on governing and potheads.

The saving through judicious load allocation for maximum benefit from the better heat rates compatible with least transmission loss was derived by unique application of the network analyzer. The paper was presented by E. E. George and H. W. Page of Ebasco and J. B. Ward of Purdue. Some 74 combinations were investigated in the process of setting up curves and tables for economical generation and delivery on the Florida Power & Light system. The procedure was commended as the most practical and direct so far recorded for achieving system economy for any loading. George added that the same network analyzer procedure had been used to fix the best location for further system capacity.

M. J. Steinberg of Consolidated Edison in discussion suggested that simplified forms of the analyzer could well be provided for the use of system dispatchers in setting their daily and hourly schedules. C. W. Watchorn, Pennsylvania Water & Power Co, said digital computers could also be used to establish the load allocation tabulation.

Further application of probability methods in determining generation reserves was a session theme, under the auspices of the Power Generation Committee, which evoked a discussion of simplification of the mathematics on the one hand and an analysis of comparative reliabilities on the other. M. J. Steinberg, Consolidated Edison, assumed a 640-Mw station and showed the limitations of the strictly unit plant of four 160-Mw units as compared with header schemes comprising (a) eight 80-Mw boilers and (b) eight 92-Mw boilers. Either is superior to the unit plant in providing higher availability of plant capacity and in reducing the requirements for system reserve with "(a)" showing 89-Mw gain and "(b)" 50-Mw. The justified added investment for the eight 92-Mw boilers on a header proves to be 11.3%, but only 2.5% for four 160-Mw boilers (about the same for two 80's on a header per turbine and only 4.4% for eight 80's on a single header). Steinberg omitted the reheat cycle, merely raising the question whether the attributed thermal gain of 5% is sufficient to overcome the demonstrated advantages of the simple regenerative cycle with the reserves afforded by a station header.

H. P. Seelye, Detroit Edison Co, simplified his earlier paper on probability by assuming units of equal size and, on this basis, indicated that 25% reserve should be provided for a 15-unit system, 16.5% for 25, and only 10.7% for 45.

Much reference was made to reheat in the discussion with mention of ELECTRICAL WORLD's Sept 10 survey article and Steinberg's expression of perplexity as to the disparity between one system with a coal cost of 10¢ per million Btu installing upwards of half a million kilowatts of reheat capacity and others with considerably much higher cost shunning it entirely. A. E. Knowlton, ELECTRICAL WORLD, hazarded the guess that the reluctant ones probably would be impressed by Steinberg's demonstration of reliability in non-unit header plants.

Electrolytic field plotting and ultrasonic tests for the insulation are pothead checks used by General Electric, according to P. N. Bosworth and H. K. Farr, in a session in which J. H. Nicholas also contributed the G&W fundamentals of design for potheads up to 69 kv.

In discussion of cable terminations L. F. Komives, Detroit Edison, doubted whether anyone was prepared to offer them for 400-kv cable even though the cable could be produced if desired. R. J. Wiseman, Okonite, raised the question whether stepping in joints is better than smooth pencilling. As for stop tubes to seal the high pressure oil from the porcelain, K. F. Wyatt, Phelps-Dodge, doubted the necessity for using them at all. E. D. Thomas, Consolidated Edison, asked for additional details of the ultrasonic transmission percentage as an index of non-homogeneity of insulation. Nicholas admitted that pothead design is largely empirical and is compromised to accommodate variations in cable sizes, insulation, and installation. Corona is the thing to avert because, he said, once it has started the failure has been initiated.

Trend of discussion on the capacitor papers indicated that appreciation of the vagaries of capacitors does not always embrace an answer to obscure ex-

ALL SECTIONS of the United States were represented at Fall meeting of AIEE at Cincinnati. Here's the proof, left to right: Robert Brandt, New England Power Co; C. P. Almon, Tennessee Valley Authority; R. M. Schahfer, Northern Indiana Public Service Co; Earl Wild, Commonwealth Edison Co, Chicago; and Dixon Lewis, Aluminum Co of America

periences. This phase followed confirmation from large enterprises of the economic merits of comprehensive installations. Dayton Power & Light Co had an interruption which originated at a capacitor bank and reported frequent static discharges since restoring the assembly to service. R. E. Ericson said 4-kv arresters on Indiana Public Service have blown up when 33-kv capacitors were switched, apparently because of surges. As for counting on capacitors to function as arresters, I. W. Gross, AG&ESCo, warned that switching may remove the dependence. All in all, switching of capacitors was the crux of the indecisive discussion.

In the discussion following the papers on aluminum the question of aluminum sheathed cable was raised. It was pointed out that aluminum sheath has been used successfully in England. Special machinery is required for extruding since pressures are double those required for applying lead sheathing to cable. Also the temperature for extruding aluminum is 700 F compared to 430 F for lead.

Grounding Guides Presented

One session on protective devices was devoted largely to presentation of committee-drafted tentative guides for grounding of generator and transmission systems and for application of ground-fault neutralizers. Performance of the latter on a regulated distribution system was reported by H. R. Tomlinson and F. B. Hunt of NEPS, Boston, as having corrected the cable failures attributed to arcing grounds on a 2.4-kv ungrounded delta primary. Single-phase regulators, however, tend to cause the neutralizer to displace the system neutral unless this is averted by avoiding resonant tuning of the neutralizer.

A second session launched two more group reports, one supporting the prevailing requirement that transmission neutralizers be capable of carrying a 30% continuous circulating current. The other set down the characteristic performance of lightning arresters and rod gaps for reference purposes.

To overcome the problem of sudden load changes on an aluminum rolling mill an automatic turbine-generator load control device was developed for the Iowa-Illinois Gas & Electric Co system. It was described by H. B. Ruud of that company. Application of this load control equipment causes the plant near the load to take the fluctuations and prevents their spreading over the system to distant plants.

New GE Relay Described

In the session on relays, C. R. Mason, General Electric, described a new relay for protection in case of loss of excitation on a generator. It is more selective and will not operate under short circuits or other abnormal conditions.

A relay that will detect an out-of-step condition during the first slip cycle was described by W. C. Morris, General Electric. It will also indicate whether one part of a system is running ahead or behind the rest of the system and by it a system can be separated at preselected points in case of a disturbance.

In the session on speed governing E. L. Tornquist, engineer of tests, Public Service Co of Northern Illinois, described test equipment which has no mechanical inertia or lost motion and requires only connections into the potential and current metering circuits of the generator. Heart of the system is a standard cathode-ray oscilloscope which shows a parallelogram that is an index of governor dead-band.

Closer cooperation between engineers of all branches and faculties and students in engineering schools was urged by J. F. Fairman, president of AIEE. His plea was for engineers to give some of their time and energies to counseling with these engineering students, telling them some of the "facts of life after graduation."

County Taxing of Federal Power Users at Issue

Whether a county in which federally owned electric power generation facilities are located can tax or license users of such power independently and in the face of existing agreements between the state and federal governments will probably be determined in a case soon to be tried by the U. S. District Court of Nevada.

The State of Nevada has filed formal notice with the federal court asking dismissal of a suit filed by Clark County (in which generating facilities of Boulder Dam are located) against the City of Los Angeles for $225,435. The county seeks to collect this sum as a tax on the power supplied to the southern California city from Boulder Dam generators. A county ordinance authorizing such a tax was passed in 1948.

Nevada's Attorney General, Alan Bible, is basing his request for dismissal of the county's suit on the existence of a federal statute—the Boulder Canyon Project Adjustment Act—under which a contract between the state and federal government guarantees payment of $300,000 a year by the government to the state from 1939 through 1987.

If Clark County should be successful in its suit against Los Angeles, the $300,000 annual payment by the federal government to Nevada would be reduced by $225,435 plus costs of the suit for the next year and approximately the same amount each year thereafter. This $300,000 payment has been included as a revenue in the state's biennial budget and, according to the state's brief, "Any reduction of such item either before or after the adoption of such budget adversely affects the entire tax structure of the state."

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PUD May Sell Energy to B. C. Electric Railway

Cowlitz PUD of Longview, Wash., has been approached by British Columbia Electric Railway Co concerning purchase by the Canadian firm of electric energy this fall.

The Vancouver company has entered into a contract with various customers in Washington state but now finds it cannot fulfill the contract because sufficient power facilities have not yet been completed. B. C. Electric Railway needs from 10,000 to 20,000 kw over a period of two months, beginning Nov 1.

The prime need is 10,000 kw, but another 10,000 will be required if the company's steam plant is not rehabilitated and put in operation.

Changes in Regulatory Policy Urged to Boost Utility Financing Program

FEDERAL AND STATE agencies could do a lot to help the electric and gas utilities in their job of raising approximately $12 billion to finance plant expansion through 1953.

That is the conclusion of a joint committee on financing utility capital requirements set up by Edison Electric Institute and the American Gas Association. In its report, made public last week, the committee suggested:

1. Rate policies that would bring earnings to "an adequate level" to attract new capital.

2. Temporary suspension of the applicability of SEC Rule U-50 (requiring competitive bidding) to sales of electric and gas utility preferred and common stocks.

3. Tax relief for utilities.

Asks Public Relations Program

On the industry's part, the report advised closer relations with investors, underwriters, and dealers and a carefully planned financial public relations program to reassure stockholders that stock earnings will not be diluted by the expansion program.

Edward M. Morehouse, vice-president, General Public Utilities Corp, and Harold H. Scaff, vice-president, Ebasco Services, Inc, were co-chairmen of the committee. They emphasized that the report was "not to be construed as an official policy statement of either the gas or electric utility industries."

Suggests New Rate Policies

Regulatory bodies should recognize that rates are fixed for the future, not for the past, the committee said. Specifically, it urged:

1. Permission to re-establish actual earnings up to the point of generally allowable standards, particularly where they have been squeezed by postwar inflation.

2. Demonstration to the investor that the regulatory process is sensitive to the problems of inflation before damage to credit results.

3. Permission to produce earnings in time to support additional capital, at or before the time when new securities must be marketed rather than when new facilities are completed for service.

To attract the new capital needed, utility stocks should be on a comparable earnings basis with industrial stocks—after allowance for variations in investor appeal—the study said. Despite some recent improvement in the market, utility common has a price disadvantage of approximately 25% compared to industrial stocks at currently demanded dividend or earnings yields.

On an industry-wide basis only a relatively small percentage increase in revenue would be needed. The committee analyzed the financial positions of three typical utilities, electric, gas, and combination. It found a 2.9% increase in revenue would eliminate this 25% price disparity between the electric company's stock price and that of an industrial firm. For the other two companies the required increases would be 2% and 5.1%, respectively.

The committee proposed a new regulation to replace Rule U-50 providing that sales of utility preferred and common may be made by any method, providing the Commission retains jurisdiction over the reasonableness of prices and spreads. The suspension of U-50 should be made permanent after a two-year trial but could be revoked at any time. Also suggested was an increase of the SEC's exemption from competitive bidding on debt transactions from $1 million to $3 million in any one calendar year.

Though Rule U-50 and competitive bidding seem to be "generally adapted" to high and medium-grade utility bonds, they haven't worked out so well for lower-grade bonds and for stocks, the committee said. The latter securities need individualized selling and careful timing of the issue, best obtained under negotiated placement. An underwriter can afford to spend a substantial amount of time and work on an issue only if he is sure of his commission.

Utility investors suffer more from taxes than do industrial stockholders because of the inevitable lags in adjusting rates and because of the higher equity investment required for each dollar of sales. The committee suggested elimination of "double taxation" and repeal of the federal electrical energy tax, which is "generally recognized as discriminatory against privately owned electric utilities and excessively expensive to administer."

SEC RULINGS

Cambridge (Mass.) Electric Light Co has been authorized to sell an additional 3,400 shares of its $25-par common stock to its parent, New England Gas & Electric Association, for $510,000 to replenish funds used for construction purposes (Release No. 9363).

United Corp (New York) has received authorization to sell an additional 50,000 shares of common of the Columbia Gas System, Inc, over the New York Stock Exchange during the next three months (Release No. 9364).

Interstate Power Co has been authorized to issue and sell the remaining $500,000 principal amount of its 3% collateral promissory notes out of an aggregate of $2.4 million of such notes, maturing on or before June 30, 1950, previously authorized. The company will issue and pledge $500,000 principal amount of its first mortgage bonds, 4½% series, due 1978, as collateral security (Release No. 9372).

Seven subsidiaries of New England Electric System have been authorized to borrow $1.2 million from banks for use in temporary financing of their construction programs (Release No. 9377).

General Public Utilities Corp has been authorized to repurchase and retire for $1,504,402.50, 107,000 shares of its common owned by its subsidiary, Associated Electric Co. Other transactions were approved at the same time: 1. GPU will make a cash capital contribution of $24 million to Aelec out of the proceeds of its sale of Rochester Gas & Electric Corp common and, to the extent required, from the proceeds of the sale of preferred stock of Staten Island Edison Corp (less the purchase price of the 107,000 shares of GPU stock); 2. Aelec will redeem and retire at 105%, $32,046,000 of outstanding 5% debentures due 1961; 3. Aelec will increase its loans to Pennsylvania Electric Co from $4,190,000 to $5,390,000 by an additional advance of $1.2 million (Penelec would borrow $7 million from Mellon National Bank & Trust Co, applying part to the repayment of advances from Aelec and the balance to construction); 4. Funds for redemption of Aelec's debentures will be acquired through repayment by Penelec of Aelec's advances to it and through $4 million of bank borrowings by Aelec. The Commission's order also rescinded and terminated a restriction upon the payments of dividends by Aelec on its common stock contained in prior SEC orders (Release No. 9379).

FINANCIAL BRIEFS

Westinghouse Electric Corp has called its entire issue of $20 million of 2¼% debentures for Nov 2 redemption. The 10-year obligations otherwise would have matured Nov 1, 1951. Holders will receive the principal plus accrued interest and a premium of ½%.

Public Service Electric & Gas Co, Newark, N. J., will redeem Nov 1, $1 million principal amount of its 3% debenture bonds, due 1963. Payment will be at 101.15, with accrued interest to the redemption date.

L-M's new Spherolite, Jr.

for better neighborhood lighting at an economical neighborhood price!

The new Spherolite Jr. offers the many advantages of an enclosed luminaire, with shielded light source and good directional characteristics. Its low original and operating costs make it most suitable for residential areas with narrow streets and wide spacings.

Some Important Features

Narrow beam for increased lighting of streets and shielding of residences.

Concentration of light in the main zone, with maximum intensity of eight times the bare lamp value. Main beam at 78° in vertical provides high visibility at wide spacings.

Choice of IES type II or 4-WAY® light distribution, as shown at left. Refractors easily attached to the specular Alzak reflector with the L-M stainless steel V-Band, which is a positive gasketless seal against bugs, dust, and water. Thus refractors are easily changed in the field, adding flexibility and reducing inventory required for maintenance.

Interchangeability to meet traffic or population growth

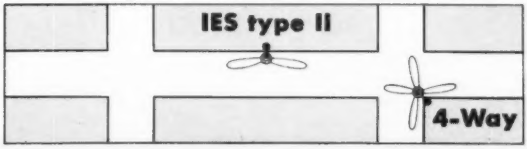
Spherolite Jr. fits the same wide variety of L-M-standardized heads as do L-M's smallest open reflectors and largest enclosed luminaires. Thus changing luminaires usually means simply unlatching one and latching on the replacement—offering a substantial saving in time and material.

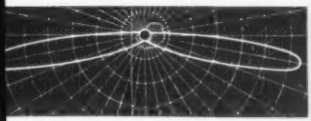
The REFLECTOR-REFRACTOR® assembly illustrated fits any of these: low voltage multiple head; high voltage porcelain head; and, with modified reflector collar, metal series heads up to 5000 volts. The type B head shown is available for either inner or outer wiring, and in either pendent or side mounted style.

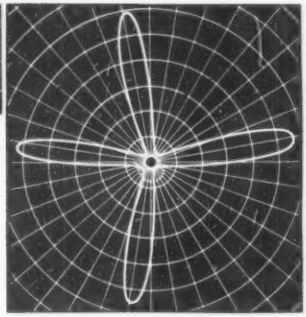
Get complete information on Spherolite Jr. and other equipment and L-M Street Lighting Engineering Service ***from the L-M Field Engineer; or write*** **Line Material Co., Milwaukee 1, Wis.**

® Reg. T. M., Holophane

Two types of light distribution







Choice of two Holophane® refractors which provide either the IES type II pattern shown above, or the 4-Way pattern for intersections at right.

7132

LINE MATERIAL Street Lighting

Complete Coordinated Equipment for All Distribution Requirements

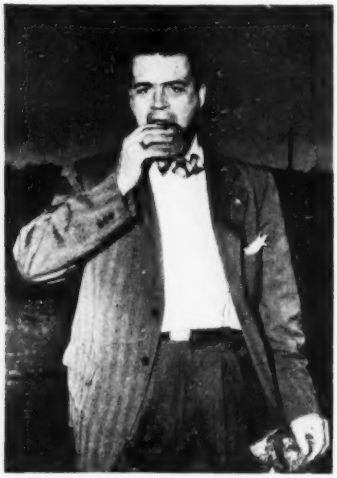
BACK TO THE FARM

Electricity Makes It Attractive

CLETUS FREDERICKS and his family are back on the farm. Five years ago they went to the city but didn't like it. Then Fredericks heard of a farm near Hillsdale, Mich., which had been abandoned for nine years. Soon Consumers Power Co was going to extend electric service to that area. Fredericks bought the farm and ordered electric service. Now his family could have the conveniences which they had sought in the city. Besides they could enjoy the rural atmosphere to which they were accustomed.

The result was a celebration that the Fredericks family never could have imagined—all because their farm was the 100,000th connected to the lines of Consumers Power. The company felt like celebrating. It is the only utility in the United States with 100,000 farms on its lines. It claims that no other utility can equal this mark because no other has that many farms in its service area.

Some 2,000 persons turned up at the celebration. The governor made a speech. So did several executives of the utility. A 4-H band gave a concert. National electrical manufacturers put on a full-scale farm equipment show. The company conducted cooking and home freezing schools for farmers' wives. And to top it all there was a barbecue with all the trimmings.



GOV G. MENNEN WILLIAMS munches

Consumers Power for years has had an extensive rural electrification program. The company built its first experimental farm line, running north from Parma in Jackson County, in 1924; so this year the company is celebrating also a quarter century of progress in farm electrification. The second line, built in cooperation with Michigan State College, is commemorated by a roadside park and monument on a road between Mason and Dansville. This line became world famous because of the experiments conducted by the College to determine the value of electricity to the farmers being served by it. In 1937 the company received the Thomas W. Martin Rural Electrification Award "in recognition of its invaluable contribution to rural life."

In 1930 Consumers Power had 2,982 miles of rural lines and was serving 8,336 farms. Now over 22,114 miles of lines are serving more than 100,000 farms. And the company's farm area is 99% electrified.

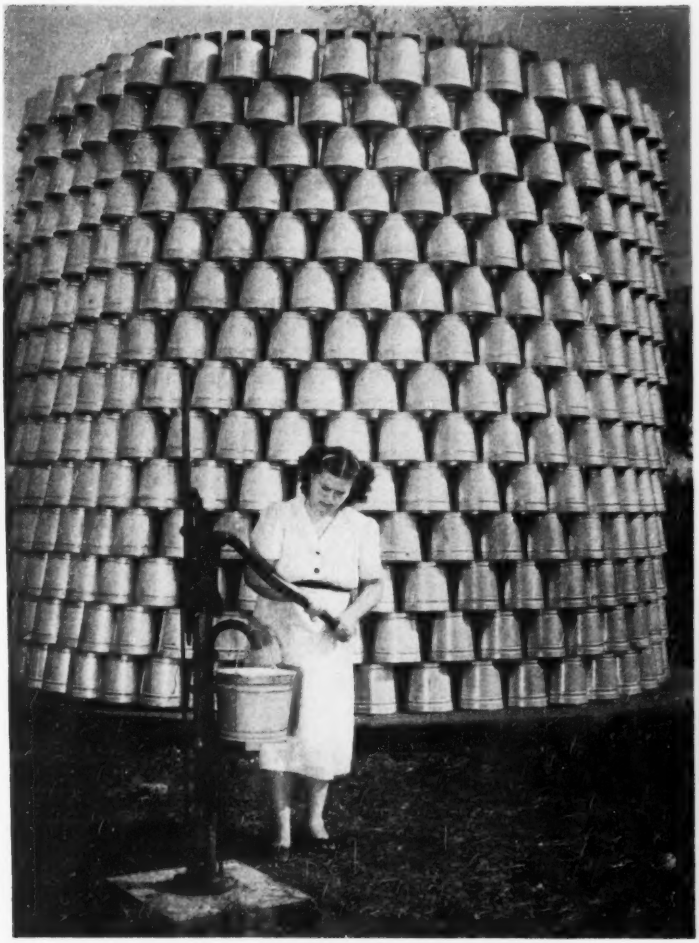
The one big goal left, the one that probably will never be reached, is to increase usage of electricity to the maximum. In 1930 average annual usage by farm consumers was 721 kwhr. Energy cost was 4.51¢ per kwhr. In 1948 usage had reached 3,051 kwhr and was still rising. Energy cost was 2.26¢ per kwhr and still decreasing. Company and consumer alike are hoping these trends will continue.

THE FREDERICKS meet the governor, but Joy[sisters, Arlene, 13, and Carol, 2; brother, Cle[

THESE KEROSENE LAMPS will be replaced [sixth as much to operate. And the Fredericks w[

doesn't seem impressed. Others are her parents; 10; J. R. Whiting, Consumers Power president

e 100-w electric lamp, which will cost only one
e adequate and correct lighting in every room

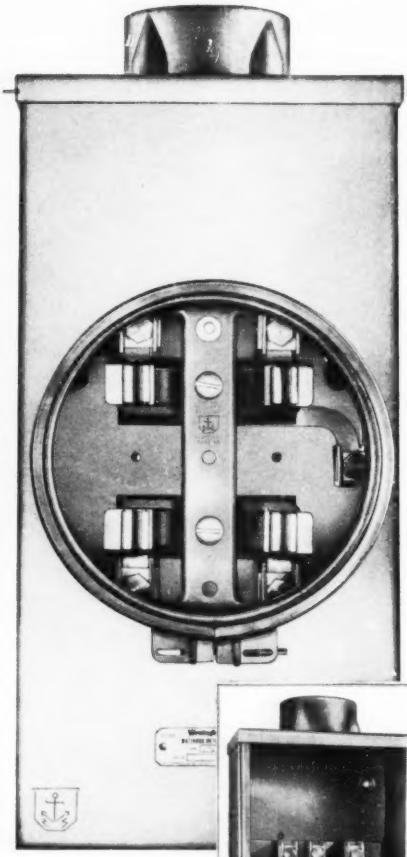


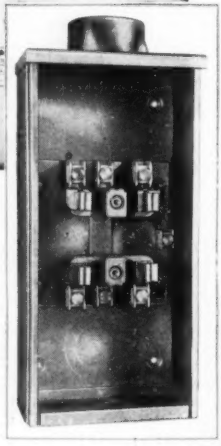
AGAINST a background of pails visualizing the number that had to be carried each month, Mrs Cletus Fredericks uses the old pump for the last time. Electricity will do the job for 4.5c a month

EASIER WAYS to cook and home freeze foods were taught by home economists at a continuous show. Farmers' wives were eager to learn the "electrical way" to preserve their winter supply of food

YOU CAN BE **SURE**.. IF IT'S

Westinghouse





Interior view of Type STU four-jaw socket with 2½" hub for use with single-phase, 50-ampere socket meter.

Also available: Type STU five-jaw socket with 2½" hub for use with 2-phase, 3-wire grounded neutral socket network meter. (Type-CS-5.)

NEW

175 AMP. METER SOCKET

Eliminates Makeshifts— Cuts Costs!

NOW you can eliminate the expense of special meter boxes by using the new Type STU meter socket for heavy current loads. Westinghouse has designed a self-contained socket that can take standard S-type meters. Installation costs are cut 'way down. Here are the reasons why:

A Socket takes up to No. 0000 cable . . . eliminating overheating. In fact, the large-size cable actually draws heat *away* from meter.

B Removable jaws and terminals in this new Westinghouse socket allow meter box to be mounted at convenience of contractor, prior to connecting up service wires.

C 175-amp socket uses standard parts and standard meters—allows the use of the right-sized conductor for the load requirements of the consumer.

Contractors will find this Westinghouse meter socket is just right for athletic fields, outdoor pumping installations, for electrically heated homes, for many other large load requirements. For more details on this moneysaving socket, ask for supplement to catalog 42-110, effective January 20, 1950. Call your nearest Westinghouse office or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-40375

Westinghouse

WATTHOUR METERS

Coal, Steel Strikes Push Power Output Downward

The combined effects of the steel and coal strikes sent electric output plunging during the week ended Oct 22.

The amount of electrical energy distributed by the nation's light and power companies amounted to 5,417,877,000 kwhr, compared to 5,538,885,000 kwhr last year, or a decrease of 2.2%. Output also was slightly below the week ended Oct 15, when 5,480,735,000 kwhr were produced.

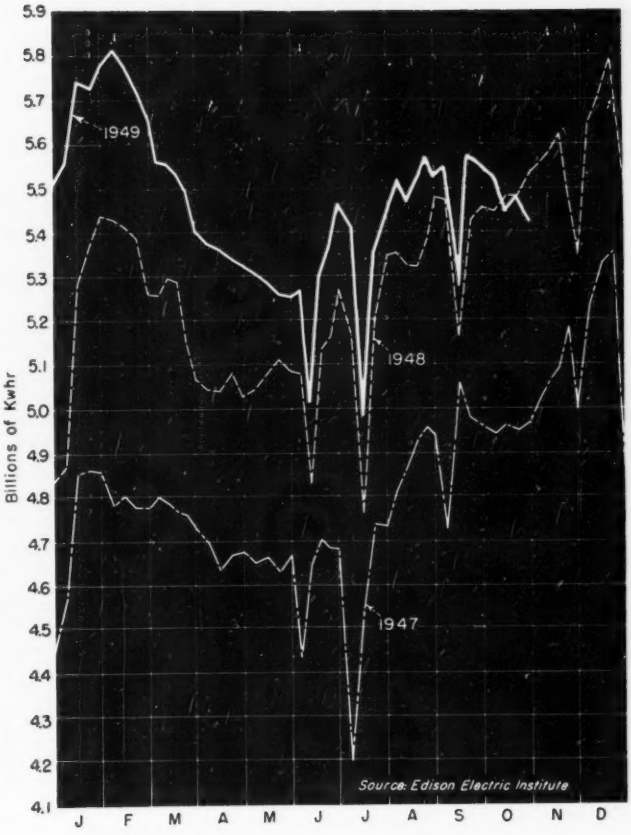
Four regions dropped below their 1948 output totals. The Central Industrial states declined 10.9%. New England 2.2%, Middle Atlantic 3.3%, and Southeast 2.4%. The West Central area barely held its own, with an increase of only 0.5% over last year. Unusual conditions prevailed in the non-industrial South Central region, which reported output up 11.6% over last year.

Weekly Output, Millions Kwhr

1949		1948		1947	
Oct 22	5,418	Oct 23	5,539	Oct 25	4,964
Oct 15	5,481	Oct 16	5,482	Oct 18	4,946
Oct 8	5,450	Oct 9	5,482	Oct 11	4,958
Oct 1	5,521	Oct 2	5,449	Oct 4	4,935
Sept 24	5,556	Sept 25	5,461	Sept 27	4,956
Sept 17	5,579	Sept 18	5,426	Sept 20	4,977
Sept 10	5,258	Sept 11	5,166	Sept 13	5,053
Sept 3	5,544	Sept 4	5,470	Sept 6	4,721
Aug 27	5,523	Aug 28	5,478	Aug 30	4,940
Aug 20	5,579	Aug 21	5,391	Aug 23	4,953
Aug 13	5,530	Aug 14	5,318	Aug 16	4,923
Aug 6	5,466	Aug 7	5,319	Aug 9	4,874

Percent Change from Previous Year

	Oct 22	Oct 15	Oct 8
New England	— 2.2	+ 3.8	+ 1.6
Mid-Atlantic	— 3.3	— 1.4	— 3.1
Central Industrial	— 10.9	— 9.5	— 8.5
West Central	+ 0.5	+ 1.2	+ 2.5
Southeast	— 2.4	+ 3.8	+ 4.0
South Central	+11.6	+11.3	+ 7.6
Rocky Mountain	+ 1.7	+ 3.8	+ 2.9
Pacific Coast	+ 7.8	+ 7.4	+ 5.6
Total United States	— 2.2	— 0.0	— 0.6



August Energy Production Rose 3.2% Over '48

Production of energy by electric utilities during August totaled 25,020,960,000 kwhr, the highest August production total of record. The August total was 3.2% over last year's and 5.6% above the 23,684,340,000 kwhr produced during July, 1949.

Water power plants produced 7,349,039,000 kwhr in August. This was a 9.1% increase over August, 1948. As a percent of total August production, water power output increased from 27.8% last year to 29.4% this year.

Industrial production, including generation by railway and railroad plants, was 4,471,225,000 kwhr in August, a decrease of 1.7% from the same month last year.

Combined utility and industrial production during August was 2.4% above the same month last year.

MEETINGS

Edison Electric Institute
Transmission and Distribution Committee, Lord Baltimore Hotel, Baltimore, Md., October 31-November 1.

Institute of Radio Engineers-American Institute of Electrical Engineers
Conference on Electronic Instrumentation in Nucleonics and Medicine, Hotel Commodore, New York, October 31-November 2.

Pennsylvania Electric Association
Communications Committee, Benjamin Franklin Hotel, Philadelphia, Pa., November 3-4.

National Electrical Contractors Association
Annual Conference, Rice Hotel, Houston, Tex., November 8-11.

National Electrical Manufacturers Association
Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., November 14-18.

Refrigeration Equipment Manufacturers Association
All-Industry Refrigeration and Air Conditioning Exposition, Atlantic City Auditorium, Atlantic City, N. J., November 14-18.

New Jersey Utilities Association
Annual Meeting, Seaview Country Club, Absecon, N. J., November 17-19.

Wisconsin Utilities Association
Joint Annual Convention, Electric and Gas Sections, Schroeder Hotel, Milwaukee, November 21-23.

Exposition of Chemical Industries
Grand Central Palace, New York, N. Y., November 28-December 3.

American Society of Refrigerating Engineers
Annual Meeting, Edgewater Beach Hotel, Chicago, Ill., December 4-7.

American Society of Agricultural Engineers
Winter Meeting, Stevens Hotel, Chicago, Ill., December 19-21.

National Farm Electrification Conference
Stevens Hotel, Chicago, Ill., December 20-22.

Plant Maintenance Show and Conference
Auditorium, Cleveland, Ohio, January 16-19.

Southwest Air Conditioning Exposition
Hall of Agriculture and the Poultry Building, Fair Park, Dallas, Tex., January 23-27.

American Society of Heating and Ventilating Engineers
Annual Meeting, Adolphus and Baker Hotels, Dallas, Tex., January 23-27.

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Heads Illinois Group

M. L. Burgin, Geneseo, has been elected president of the Illinois Public Power Association.

IN THE INDUSTRY

FISCHER BLACK

THE INTERNATIONAL Association of Electrical Leagues decided that it was outside the scope of the organization to adopt the resolution of the Electrical Association of New Orleans calling for immediate steps by the IAEL to combat the trend toward a welfare state. This might imply that the idea will die even if a majority of leagues approve the resolution. Such an outcome is easily conceivable. But with a few smart people acting as a nucleus, this New Orleans campaign can rapidly grow to national proportions through other channels, some of which have already been used.

There are literally thousands of groups in the country who can give backing to this or a similar resolution. In fact, the resolution could be slightly reworded, to leave out reference to IAEL. It could then be used by any group wishing to maintain freedom of individual enterprise. A closing statement proposing that copies of the resolution be sent to state and Congressional representatives will add to its effectiveness.

Such action has already been taken by a substantial number of organizations. The Bergen Electrical League reports to the New Orleans Association through R. E. Ford that, "I am pleased to advise you that a resolution was adopted and sent to our representatives in Congress"; Cincinnati Electrical Association will present the statement to its own Board of Trustees; and Inland Empire Electrical Dealers Association adopted a resolution following the general text of the New Orleans proposal.

Significantly, the idea is spreading to outside groups who can generate tremendous momentum by carrying it to other cities through their many branches. The Board of Managers of the New Orleans Chapter of Illuminating Engineering Society passed a similar resolution. The Sales Executives Council of New Orleans passed the resolution and plans to present it to the National Sales Executives group. Similar action was taken by the Executives Club of New Orleans; the Claiborne-Carrollton Property Owners Organization; Home Builders' Association of New Orleans; and the South Louisiana Chapter of the National Electrical Contractors Association.

Someone in each city to spark the activity would lead to the kind of movement that could sweep America. Members of the electrical industrial family need not be the promoters but they will have to lend a helping hand. Someone must be lined up to present the resolution at a meeting of every freedom-loving organization. In fact, an able speaker on the subject of fighting the collectivist state as a prelude to the vote would give it the necessary punch.

The Electrical Association of New Orleans sent copies of the resolution to every business organization in New Orleans. The next step is to get it into the hands of every group in every city. Copies of the resolution are available as published in the Sept. 17 issue of ELECTRICAL WORLD or by writing to the Electrical Association of New Orleans, 921 Union St., New Orleans 13, La.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Gypsum and bentonite clay make good backfill for buried zinc anodes to maintain soil conductivity—why not for ground rods and plates?

Peak-load estimates 1% too high are never likely to modify generating capacity programs but errors of the same amount on the low side are certain to accumulate to an insufficiency; correction or toleration of losses have similar effects.

Insulator manufacturers will, of course, make 96 different insulators if users demand them but in their hearts they would prefer to make the 3 that would suffice if the egos would subside.

Water-gage glasses cannot be seen directly by the great majority of operators charged with the responsibility of maintaining the level of water in the boiler. Television is being used in some plants, mirrors in most.

Generator instability is most likely to occur during light-load periods when power factor is highest and excitation the lowest. Such instabilities are, however, infrequent.

Neutral wires are considered by some a greater hazard on congested pole-tops than phase wires.

Short-circuit tests of transformers give little information about the temperature rise in the core areas affected by the main flux. Pump-back tests give more.

Coal clogging has been reduced by increasing the pipe diameter progressively along the path of the coal.

Messenger sizes for ordinary primary aerial cables should not be as numerous as eleven; three apiece for 5- and 15-kv cables should be ample for support purposes.

Probable remaining life in rotating machine windings is something that cannot be predicted with any precision in the absence of a really reliable non-destructive test.

Rainfall causes are still very obscure despite intensive research. Drought due complete absence of those causes and the causes of thunderstorms are equally obscure.

MANUFACTURERS and MARKETS

PRESIDENT Nicholas J. Conrad breaks ground for the first unit of a new plant for S&C Electric Co. Totaling 51,000 sq ft, the new building now under construction on Chicago's North Side will house all final assembly operations. Those present were (l to r) L. M. Thompson, comptroller; A. B. Chilcoat, production and purchasing manager; D. B. Mackie, advertising agent; G. C. Rossow, properties manager; G. F. McMahon, chief chemist; John R. Conrad, vice-president; Nicholas J. Conrad, president; C. C. Martin, assistant production manager; H. A. Glover, sales administration manager; E. J. Sroka, superintendent of manufacturing; S. I. Lindell, chief engineer; R. S. Barbaras, sales promotion manager; and C H. Baker, senior development engineer

New S&C Electric $600,000 Plant Started in Chicago

Announcing the start of construction of a new manufacturing plant at 6600 Ridge Avenue on Chicago's North Side, Nicholas J. Conrad, president and co-founder of S & C Electric Co, stated that the additional facilities will enable the company to provide better products and services to its customers and will also provide needed space and equipment to keep pace with the rapidly growing demand for its Alduti interrupter switches and switchgear units.

The first building, of modern design and steel and brick construction, will total 51,000 sq ft. Costing $600,000, including land and equipment, it is scheduled for occupancy by March, 1950, and will be used solely for the final assembly of the company's widely known high voltage protective and interrupting equipment. Fabrication operations, engineering, sales, and administrative functions will continue at the present 1435 Ravenswood Ave address. Ultimately, however, all operations will be consolidated at the Ridge Avenue location, where present plans call for an ultimate facilities investment of $2 million.

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Steel Shortage Brings Layoffs in Appliances

Production cutbacks and layoffs in the home appliance industry began last week as the steel and soft coal strikes cut more deeply into the national economy.

Nearly 2,000 workers have been forced into idleness at General Electric Co's Erie plant, with the number expected to reach 6,000 by the end of October and 8,500 by the end of November if the strikes continue. Most of the refrigerator division would close down by Nov 1.

Hotpoint, a major GE affiliate, will drop more than 5,000 employees at its Chicago electric range plant, one of the largest in the country, because of the shortage of steel. Production workers will be dismissed soon after Nov 1, and this cutback will bring additional layoffs in other departments.

Consumer Demand Rises; Can't Meet It, GE Says

Consumer demand has picked up so much that General Electric Co won't be able to meet all its production requirements for the rest of 1949, whatever happens to steel supply.

Sales for the company's consolidated operations during the third quarter of this year amounted to $388,615,888, or 6% more than in the corresponding quarter of 1948, Pres Charles E. Wilson reported. This marked, he said, "a complete reversal of the unstable but steadily downward trend in demand for General Electric appliances which was characteristic of the second quarter." Net sales for the first nine months of the year were $1,190,372,404 which was 5% above the similar period of 1948.

Despite the sales jump, third quarter net earnings available for dividends were $21,060,037, or 28% below the equivalent period last year. This was equal to 73¢ a common share, compared to $1.02 a share in 1948.

Principal cause, Wilson reported, was "the adverse effect on our margins of frequent adjustments of production schedules in continuing but futile attempts to maintain a reasonable balance between output and the erratic demand for many of our products." The special dividend of $6,525,310 received in September, 1948, in connection with liquidation of GE Employees Securities Corp, for which there was no equivalent this year, also helped sharpen the earnings decline.

Net earnings in the first nine months totaled $67,612,879, 19% less than the $83,893,459 earned in the corresponding period last year. This 1949 net was equivalent to 5.7¢ on each dollar of sales and to $2.34 on each share of common stock, as compared to 7.4¢ and $2.91 last year.

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Copperweld First Steel Firm to Sign Contract

A strike of 1,100 Copperweld Steel Co employees at the company's Glassport, Pa., wire and cable plant ended Oct 20 when Copperweld and the CIO United Steelworkers signed an agreement.

The contract, first to be signed with one of the steel companies struck Oct 1,

provides for a 6¢-an-hour company-financed pension plan and for assumption by Copperweld of the entire cost of an existing 7¢-an-hour social insurance program.

MANUFACTURING BRIEFS

Shipments of aluminum sheet, plate, and strip increased during August for the first time in six months. They totaled 47,892,491 lb that month, compared with 41,711,932 lb in July. Preliminary estimates of September shipments indicate a continuing upswing, the Aluminum Association reported.

Reynolds Metal Co has shipped more than 2 million lb of ACSR every month since production began in April. Shipments through Sept 8 total 10,122,304 lb.

Powermatic Ventilator Co has changed its name to Iron Lung Ventilator Co. Headquarters remain at 4019 Prospect Ave. Cleveland 3, Ohio.

Some 3,000 persons won $62,319 in Westinghouse Electric Corp suggestion awards during the first six months of 1949. The company reported that 6,286 employees turned in 14,646 suggestions, with 5,241 acceptances. Almost $10,000 was distributed in the form of extra awards for ideas that later proved more valuable than they had seemed at first.

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New Sales Assignments

Electrical manufacturing companies have recently made the following appointments to their sales staffs:

Combustion Engineering-Superheater, Inc. has announced that the sales territory formerly covered by W. Z. Harrison & Co, Salt Lake City, Utah, has been divided between Joy & Cox of Denver and the Los Angeles office of the company. Joy & Cox will now handle the state of Montana, western Wyoming, Idaho, and Utah, while the state of Nevada is assigned to Combustion's Los Angeles sales office.

C. J. Tagliabue Corp. Newark, N. J., has appointed Joralemon, Craig & Co, 112 S. 16th St. Philadelphia 2, Pa., to represent it.

Automatic Control Co. St. Paul, Minn., has appointed A. T. Timmerman, 759 N. Milwaukee St. Milwaukee, Wis., as representative for eastern Wisconsin and Michigan peninsula territory.

Lincoln Electric Co. Cleveland, has assigned sales and engineering responsibility in the Indianapolis area to E. E. Goehringer as district manager. The Indianapolis office is located at 3343 Central Ave.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Illinois—M. J. M. Electric Co-operative, Inc., W. H. Monke, pres., Carlinville, approx. 111.45 mi. rural distr. lines, 66 mi. single phase and tie lines, approx. 46 mi. rehabilitation and conversion existing lines, Jersey, Macoupin and Montgomery Counties, Proj. Illinois 40 NPR, Macoupin. Rural Line Engineers, 440 S. Brentwood Blvd., Clayton, St. Louis, 5, Mo., engrs.

Minnesota — Clearwater-Polk Electric Co-operative, Bagley, about 141 mi. rural distr. lines, Clearwater and Polk Counties, Proj. Minnesota 161C Clearwater. **$150,000.** C. J. Hastad, Halstad, consult. engr.

New Mexico—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Fort Sumner, one vertical shaft single stage, mixed flow or propeller-type pump with capacity of 20 cu. ft. per second under total head of 21.3 ft. and one 70 hp. vertical shaft, propeller-type hydraulic turbine with V-belt drive connection to above pump, etc., Fort Sumner Pumping Plant, Fort Sumner Proj., Spec. 2812. L. N. McClellan, ch. engr.

North Dakota — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, f.o.b. cars Rugby, Devils Lake, Lakoto, Carrington, Jamestown, Valley City, Edgeley, Forman and Washburn, outdoor power transformers with automatic-tap-changing-under-load equip., outdoor lightning arresters; outdoor auto-transformers, for advance power sys., REA Co-operatives, Missouri River Basin Proj., Spec. 2813. L. N. McClellan, ch. engr.

Ohio—American Gas & Electric Co., 30 Church St., New York, N. Y., high voltage power line, carrying between 300,000 and 360,000 volts, from Ohio River near Pomeroy to Columbus, area, with two branches from there, one to Lima and the other to Indiana border, aluminum or copper conductors will be used. **$5,000,000.**

Oklahoma—Tri County Electric Co-operative, Inc., Hooker, sys. imprvs. and completing previously approved constr., Texas Co. **$250,000.**

Tennessee—Upper Cumberland Electric Membership Corp., Carthage, 50 mi. rural distr. lines and sys. imprvs., Jackson Co. **$325,000.**

Texas—Kimble Electric Co-operative, Junction, 174 mi. rural distr. lines, Edwards Co., $144,000. Plans deposit $25. L. H. Flood & Co., 2906 Franklin St., Waco, engrs.

Wash., Everett—Bureau Yards & Docks, Seattle, rein.-con. T-shaped transmitter bldg., at Jim Creek, near here. Approx. $1,000,000.

Low Bidders & Contracts Awarded

Iowa — Farmers Electric Co-operative, Greenfield, 221.4 mi. rural distr. lines, Adair, Guthrie, Adams, Union, Madison, Cass and Audubon Counties, to Ferguson-Diehl, Jefferson, **$280,205.** Bids 10/4.

La., New Orleans—Louisiana Power & Light Co., c/o contractor, Ninemile Point Steam Electric Plant, to Boh Brothers Constr. Co., 2400 Cypress St., Approx. **$100,000.**

Minnesota—Central Minnesota Co-operative Power Assn., W. W. Hanzlik, pres., Oct. 7, about 213 mi. rural distr. lines, Redwood Co., (Minn. 60-G Redwood), from O. A. Mork, Clarkfield, **$242,401.** Banister Eng. Co., 1549 University Ave., St. Paul, engr.

Missouri—Co-Mo Electric Co-operative, Jack H. Needy, mgr., Tipton, labor only, 405.95 mi. rural distr. lines and 39.5 mi. conversion lines in Cooper, Monteau, Cole, Benton, Morgan and Camden Counties, to Triple H Constr. Co., Linton, Ind., $215,174.

Montana—Tongue River Electric Co-operative, Terry, Oct. 6, 83.9 mi. single phase 2 wire and .95 mi. 3 wire rural distr. lines, Prairie, Custer and Dawson Counties, to Line Builders, Billings, **$75,776.**

Oklahoma—Northfork Electric Co-operative, Sayre, 207 mi. rural distr. lines, Beckham Co., to B-Line Constr. Co., First Natl. Bldg., Oklahoma City, Zone 2, **$182,273.** Est. $200,000. Awarded 10/1.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Ind., Hammond—Lever Bros. Co., 59 Memorial Dr., Cambridge, Mass., 4 story margarine plant addn., to existing soap and edible products plant, Indianapolis Blvd. and Homan Ave. **$2,000,000.**

Md., Baltimore—Mayor & City Council, City Hall, plans by Laclus R. White, Jr., 10 W. Chase St., 5 story, brick, concrete, steel infirmary, **$3,600,000**; plans by Palmer Fisher, Williams & Nes, 1020 St. Paul St., 4 story, concrete, steel, concrete block tuberculosis hospital, **$2,471,000**, both at City Hospitals, Eastern Ave. R. E. L. Williams, 410 Municipal Bldg., bldg. constr. engr.

O., Cincinnati—Veterans Admin., Vermont Ave. between H and I Sts. N. W. Wash. D. C., 11 story, bsmnt., 500 bed hospital. $7,500,000.

Pa., Newton Square—Sun Oil Co., 1608 Walnut St., Phila., science center, $4,000,000. Frederick G. Frost, Jr., 144 E. 30 St., New York, N. Y., archt. Wohlpart & Hart, 155 E. 42 St., New York, N. Y., engrs.

Tex., Houston — Consolidated Western Steel Corp., c/o U. S. Steel Corp., 2087 E. Slauson St., Los Angeles, Calif., 100,000 ton capacity electric-welded steel pipe mill, $4,000,000; roads, area paving and water, sewers, gas, electric sys., $350,000.

Wash., Seattle—Community Memorial Hospital Assn., c/o Dr. R. E. Nelson, 900 E. 63 St., Zone 5, hospital, E. 115 St. and Meridian Ave. **$2,750,000.**

Low Bidders & Contracts Awarded

Md., Baltimore—American Can Co., 230 Park Ave., New York, N. Y., 1 story, 150,000 sq. ft. brick, steel plant, to Turner Constr. Co., 1500 Walnut St., Phila., Pa., **$1,500,000.**

Mass., Holyoke — Commonwealth of Mass., Trustees Soldiers' Home, Sept. 16 brick, steel soldiers' home, Cherry St., to M. Slotnick Corp., 333 Washington St., Boston, **$1,979,333.** Wm. Nelson Jacobs Assoc. 460 Park Sq. Bldg., Boston, archts.

N. Y., Rego Park—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. extens., Brooklyn, Zone 1, Oct. 18, general contract P. S. 175, 102 St. from 64 Rd. to 65 Ave., from T. G. K. Constr. Co. Inc., 55 W. 42 St., New York, Zone 18, **$1,146,200.**

W. Va., Parkersburg—E. I. duPont de Nemours, duPont Bldg., Wilmington, Del., 3 story, 10x200 ft. brick, steel plant addn., separate contracts, **$1,500,400.**

Wyo., Cheyenne—Sisters of Charity of Leavenworth, Xavier, Kan., Oct. 6, 4 story, 75x200 ft. hospital with 3 wings, from Olson Constr. Co., 1549 S. 2 St. West, Salt Lake City, Utah, **$1,128,900.**

QUALITY CONTROL DATA SHEET

SYLVANIA FLUORESCENT LAMPS

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Each filament must be accurately formed of coiled tungsten wire of the very highest quality. They must be then carefully and properly coated with a chemically pure emissive material that supplies the electron flow for carrying the electric current from one filament to the other.

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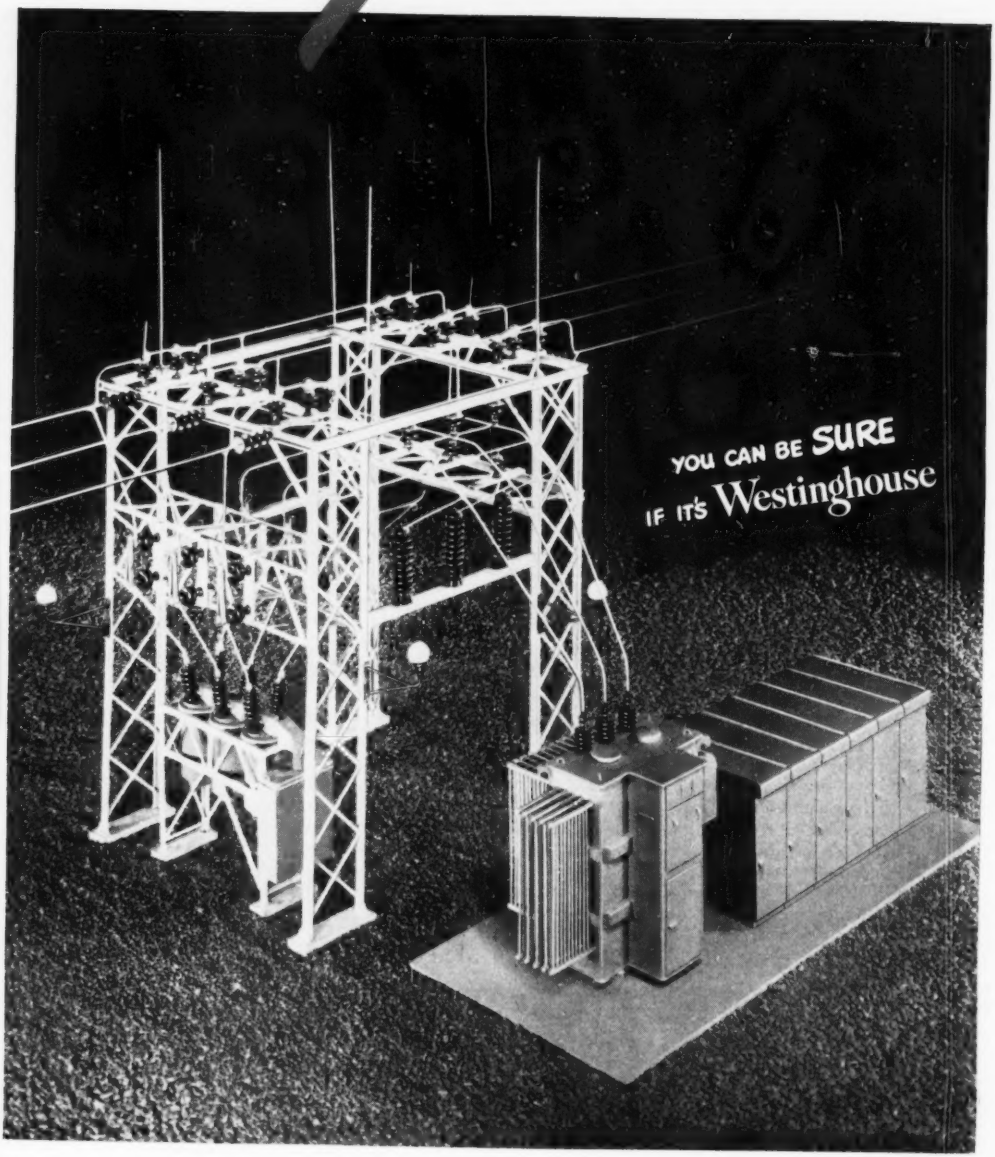

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ECONOMY: Low manufacturing costs, realized through standardized design are passed on to you through the medium of highest quality equipment . . . liberally designed. You save the cost of special engineering, as well as ordering and coordinating many separate components.

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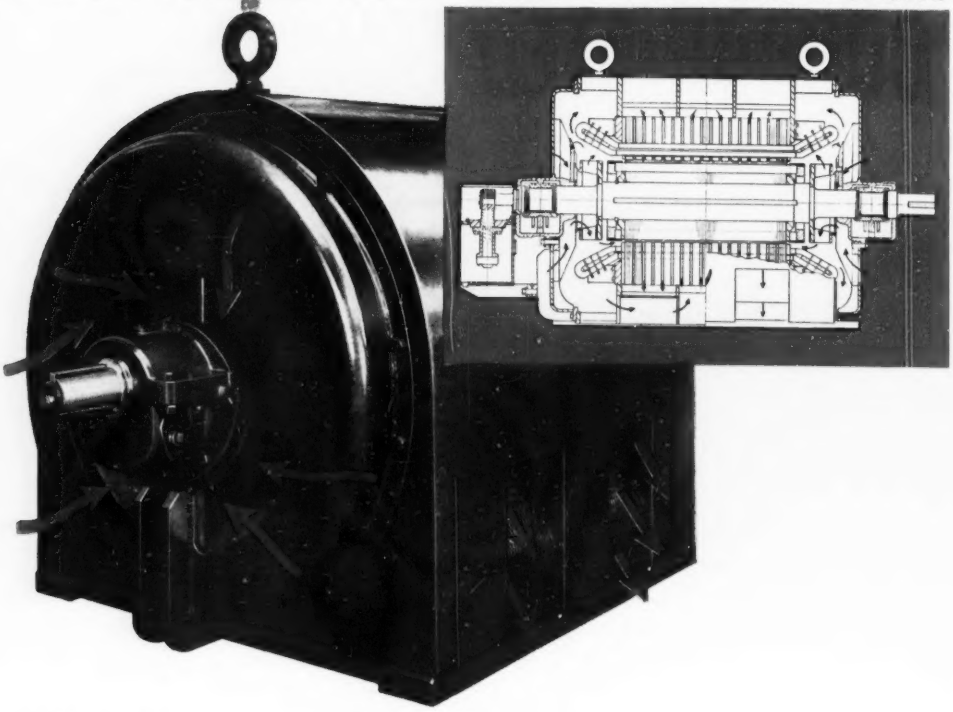

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NEWS ABOUT PEOPLE

Vepco Vice-President Heads PUA of Virginias

M. C. Smith, vice-president, Virginia Electric & Power Co, has been elected president of the Public Utilities Associ-

M. C. SMITH

ation of the Virginias.

Before joining Vepco in August, 1936, Mr. Smith had been president of Baton Rouge (La.) Electric Co and of El Paso (Tex.) Electric Co. A graduate of the University of Maine, he started his utility career with Stone & Webster Management Corp in Sydney, Nova Scotia, in 1912.

Other positions held by Mr. Smith include those of manager, Brockton & Plymouth (Mass.) Street Railway Co.; electrical superintendent, Lowell (Mass.) Electric Light Corp; general superintendent, Nova Scotia Tramways & Power Co, Halifax; and manager, Cape Breton Electric Co, Sydney, Nova Scotia.

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H. R. Salisbury has been appointed president of the Air Reduction Sales Co, New York. Mr Salisbury has been with the organization more than 23 years in various executive capacities.

Dr E. F. W. Alexandreson, consulting engineer of General Electric Co and inventor of the high-frequency alternator, was honored in Schenectady Oct 20. A plaque was unveiled on the anniversary of the first practical use of his invention —the sending of Pres Woodrow Wilson's "Fourteen Points" to Germany at the close of World War I. He is a past president of the Institute of Radio Engineers.

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Alvin H. Kessler Made New IAEL President

(See Front Cover)

New president of the International Association of Electrical Leagues is Alvin H. Kessler, executive secretary of the North Central Electrical Industries, Minneapolis, since 1946.

Mr Kessler assisted in the organization of NCEI in 1936. At first he handled its promotion and business development activities.

In 1920 Mr Kessler joined the financial department of St. Louis Coke & Iron Co, Granite City, Ill. Later he spent 10 years in Chicago, in sales and promotion with American Nokol Co, with Grigsby-Grunow Co, and in the sales department of Stewart-Warner Corp.

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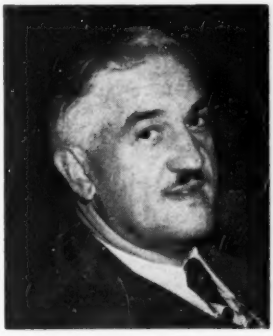
E. T. Moore, director of residential sales for Virginia Electric & Power Co, Richmond, has resigned to become vice-president and general manager of the Commonwealth Sales Corp in Richmond. Mr Moore has been engaged in sales and promotional work in the electric utility field in Florida and Virginia since 1926. He went to the Vepco system from Virginia Public Service Co in Alexandria when that company merged with Vepco in 1944.

Howard A. Holmes, planning engineer of the Monongahela Power Co, Fairmont, W. Va., and one-time head of the old operating and engineering department, has retired after completing more than 26 years with Monongahela and predecessor companies. Mr Holmes joined the utility company in 1923 after an association with the Duquesne Light Co, Pittsburgh, Pa.

Samuel P. Adams, vice-president and treasurer of the Otter Tail Power Co, Fergus Falls, Minn., has resigned as vice-president and treasurer. Mr Adams joined Otter Tail Power Co in 1916. He became treasurer in 1921 and vice-president in 1925.

Buchal Managing Sales for Modern L&E, Chicago

Fred J. Buchal has been appointed general sales manager of Modern Light & Equipment Co, Chicago. Mr. Buchal



FRED J. BUCHAL

was formerly with the Leader Electric Co. He has been in the electrical business since 1931 and with Leader Electric since its inception.

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Alan S. Fitzgerald, San Francisco electrical research engineer, has been awarded the Levy Medal of the Franklin Institute in recognition of the "exceptionally clear manner" in which he presented "the design criteria of non-electronic amplifiers." He joined General Electric in 1924, working on relay engineering and the development of electronic relay systems. At the present time he is establishing a research laboratory in San Francisco.

Harold V. Bozell, president of General Telephone Corp, New York, has been elected president of the United States Independent Telephone Association. Mr Bozell is a former editor of ELECTRICAL WORLD.

Harold A. Smith, formerly public relations director of Young & Rubicam, has been appointed associate public relations director of American Gas & Electric Service Corp. His experience includes 12 years in the publicity department of the New York *Daily News*; five years as promotion manager

and sales promotion manager of *Liberty Magazine;* and seven years with Young & Rubicam, where he was successively copy chief, manager and director of the public relations department.

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New Appointments Made by Westinghouse Corp

Several staff changes in sales and manufacturing have been announced by Westinghouse Electric Corp. **Ray H. Timmons** has been appointed manufacturing manager of industrial products to supervise and coordinate manufacture of such equipment as meters, transformers, motors, and generators. He formerly was manager of manufacturing for the company's transportation and generator division at East Pittsburgh.

J. C. Fink, formerly manager of the industry engineering department, has been named assistant to A. C. Monteith, vice-president in charge of engineering.

Henry N. Muller, Jr. manager of the educational department of Westinghouse, has been named assistant to the vice-president in charge of engineering, with expanded responsibilities in the engineering field. Mr Muller's new responsibilities include materials and standards engineering, liaison engineering, and foreign engineering, all formerly a part of headquarters engineering departments.

James E. Woodall has been named manager of the Fairmont, W. Va., plant of the Westinghouse Lamp Division. He joined Westinghouse 25 years ago at its Belleville (N. J.) plant.

Appointment of **R. P. Wagner** as manager of the industrial products advertising and sales promotion department has been announced. He succeeds **J. H. Thomson,** who has become a vice-president with Electrical Publications, Inc. Since joining Westinghouse Mr Wagner has been associated with the industrial products advertising and sales promotion department. Previously he had been identified with Hobart Brothers, Troy, Ohio, as director of public relations.

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William H. Nalder, chief designing engineer of the Bureau of Reclamation, Denver, Colo., has accepted a UN request to serve with the Economic Survey Mission for the Middle East. Mr Nalder is expected to leave in the near future for Beirut, Lebanon, to join members of the Mission now there working under the direction of Gordon Clapp, chairman of the board of directors, Tennessee Valley Authority.

New Assignments

Jack L. McDonald has been named director of special services for Central Arizona Light & Power Co, Phoenix. He will direct the utility's youth program, and will conduct a speaker's bureau and plant tour section. Mr McDonald was formerly new business manager for Arozona Edison . . . **J. A. F. Smith** has been appointed assistant superintendent of distribution of the Savanah Electric & Power Co. He brings to his new assignment a wealth of experience in the distribution and generating departments gained during 23 years with the Florida Public Utilities Co. . . . **A. H. Forman, Jr,** formerly assistant to the vice-president of Mississippi Power & Light Co in Jackson, has been appointed assistant to the president of Central Arizona Light & Power Co. Phoenix. He has had more than 23 years of experience in the utility industry . . . **Earl Swift,** town engineer of Burlington, Ont., has been appointed general manager of the Hydro-Electric Commission of Burlington, Ont.. He will retain his present position as engineer for the municipality . . . **Stanley E. Wolkenheim** has been named sales supervisor of the three lines of electric water heaters manufactured by the A. O. Smith Corp, Kankakee, Ill. Mr. Wolkenheim enters the marketing division of the Kankakee Works with a broad background in electrical appliance distribution . . . **Robert H. Robinson** has been appointed sales manager of William Brand & Co, manufacturers and distributors of the Turbo line of electrical insulating materials, with headquarters at the home office, 276 Fourth Ave, New York 10, N. Y . . . **W. F. King** has been named assistant engineer in charge of mechanical design of the motor and generator section of Allis-Chalmers' electrical department. Mr. King has been associated with A-C since 1927 . . . **E. A. Tracey** has been appointed vice-president of the Mitchell Manufacturing Co, Chicago, and general manager of the air conditioning division. Prior to his association with the Mitchell Manufacturing Co, Mr. Tracey was president of the Majestic Radio & Television Corp and vice-president in charge of sales of the Zenith Radio Corp . . . **Oscar M. Mansager** will take over the sale of fractional-hp motors for the Hoover Co, North Canton, Ohio, in addition to his present duties of handling sale of Hoover electric irons and special electric cleaners. **Joseph S. Hoover** has been made manager of dealer relations, and **W. Wallace Powell,** sales education head, has been given added duties in connection with sales research and in directing dealer demonstration methods and display . . . C. H. Hosterman, for many years manager of the accessories department, has been appointed manager of the general apparatus department. Mr. Hosterman joined the Elliott Co in 1922 . . . **E. G. Schroeder** has been made field sales manager of the Electric Products Co, Cleveland. Mr. Schroeder joined Electric Products in 1945. He was formerly associated with the New York State Electric & Gas Corp and the General Electric Co.

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Harry K. Wilcox, Jr, has been appointed assistant sales manager of the I-T-E Circuit Breaker Co, Philadelphia, and **Nye S. Spencer** has been made manager, equipment sales. Mr Wilcox, formerly manager, equipment sales, has been with I-T-E since 1936. Mr Spencer was formerly an application engineer in the Philadelphia office and more recently was with the I-T-E Chicago district sales office.

OBITUARY

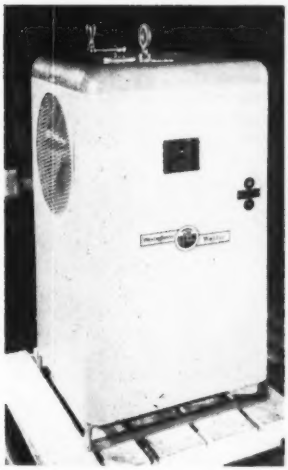
Charles F. Mosher, 69, former general superintendent of Western Massachusetts Electric Co, Greenfield, died recently at St. Petersburg, Fla. He had served with the then Greenfield Electric Light & Power Co as engineer in charge of generating plants and with Turners Falls (Mass.) Power & Electric Co as superintendent of generating and substations. Mr. Mosher held the Western Massachusetts post from 1938 to 1944, when he retired but continued his association as a newly elected director.

James Alexander Smith, 77, electrical engineer who helped build the first power plant at Niagara Falls, N. Y., died Oct 17 in Niagara Falls, Ont. He had been employed by Westinghouse Electric Corp as a district engineer at Cleveland and later was in charge of Westinghouse offices at Buffalo and Niagara Falls.

Douglas B. Hobbs, who was in charge of the educational and technical information activities of the public relations and advertising department of the Aluminum Co of America, with offices in Pittsburgh, Pa., died of a heart attack on Oct 11 in New York. He was 19 years old.

Charles Alfred Maguire, former member of Ontario Hydro Electric Commission, died Oct 14 at his home in Toronto. He was 74. Mr. Maguire was a past president of the Ontario Municipal Electric Association.

NEW EQUIPMENT



D-C Welder

PLATE-TYPE RECTIFIERS are utilized in a d-c welding machine. Ratings are in accordance with NEMA standards for industrial, single-operator arc welders.

Major components are: 3-phase welding transformer, 3-phase adjustable reactor, and 3-phase selenium full-wave rectifier. No-load loss in 300-amp welder is 500 w—considerably below that of conventional motor-generator welders according to the company. Full load efficiency is 66%, and increases at reduced load to a maximum of 73% to 20% rated load. Ratings of 200, 300, and 400 amp are available.

WESTINGHOUSE ELECTRIC CORP. BOX 868, PITTSBURGH 30, PA.

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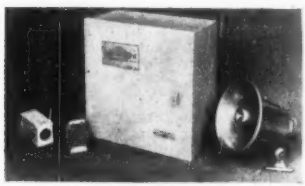

Electronic Narrator

MESSAGES FROM 5 sec to 2 min in duration will be repeated indefinitely from a continuous electronic tape by an "electronic narrator". Intended primarily to deliver a warning in time to prevent accidents, the speaker can be activated by the starting switch of a machine, breaking a light beam, pushing a button, or stepping on a mat. A timing device can be connected to have the machine deliver selected messages at desired intervals.

New messages are put on the tape by inserting the microphone eraser mechanism which erases old messages as the new ones are being recorded. The narrator is a General Electric Co development that is being adapted to industrial and public safety fields by AMERICAN ALLSAFE CO. 1245 NIAGARA ST, BUFFALO 13, N. Y.

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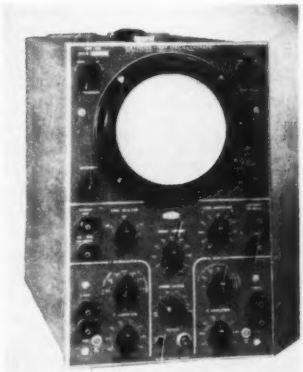

Oscillographs

TYPES 304 AND 304-H cathode-ray oscillographs replace older models and feature instantaneous recovery from signal overload at high gain, sweeps variable from 2 to 30,000 cps, and sweeps obtainable as slow as 10 sec or more. Vertical and horizontal deflections are respectively expandable to four and five times full-screen diameter.

Cathode-ray tube of type 304 is operated at overall accelerating potential of 1,780 v. An additional intensifier power supply increases this potential to 3,000 v in the type 304-H, facilitating use of long-persistence screens from which writing speeds up to 2.8 in. per microsec can be photographed.

ALLEN B. DUMONT LABORATORIES INC. 1000 MAIN AVE, CLIFTON, N. J.

Motor Controller

A MANUAL MOTOR CONTROLLER and enclosed general purpose circuit breaker, fully magnetic in operation, is available to maximum ratings of 50 amp. 250 v, with 5,000 amp interrupting capacity. Unit can be used as a manual disconnect, yet provides automatic overload and short circuit protection. Features include 8 knockouts, hinged steel cover easily removable for wiring purposes, and padlocking facilities. It is made in single, two, and three-pole construction.

HEINEMANN ELECTRIC CO. 98 PLUM ST., TRENTON 2, N. J.

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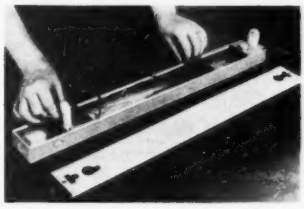


Strip Light

A SMALL SIZE strip light utilizes a sliding socket rack to facilitate installation and service. Mounting and connections are made from either side of the channel. Knockouts and recessed ballast holes are provided for desired mounting. Finish is hot-bonded synthetic aluminum. "Strip-Lite" is produced in high and low power factor models taking 14, 20, 30, or 40-w lamps.

GIBSON MFG CO, 1915 PIEDMONT AVE. N. E., ATLANTA, GA.

ELECTRICAL BUSINESS OUTLOOK

The number of electric appliances per home can grow substantially in the next few years. Right now appliance sales are booming. And there's a big enough market to keep them high in 1950 and beyond.

Three factors give strength to the long-term appliance outlook: (1) a number of new appliances are selling well but are still owned by relatively few people. (2) consumers still have large savings to invest in appliances if they want to. (3) credit facilities are ample to finance an increased volume of appliance sales.

Some idea of the potential appliance market can be gleaned from the chart below showing the proportion of electric customers who own certain appliances. The items shown accounted for 66% of appliance sales in 1948. Three-fourths of wired homes have refrigerators. Two-thirds have electric washers. Almost all have radios. But little more than half have vacuum cleaners. Only 9% have water heaters. And only 4% have freezers.

Some new appliances have still only scratched the market. Latest available figures show only 3.6% saturation for electric blankets; 2.9% for television sets; and a little over 1% for electric dishwashers and disposers. These figures have probably improved during 1949. But the potential indicated is still enormous.

The latest Federal Reserve Board survey of consumer buying power (early 1949) showed that a big share of our families can afford these new appliances if they want them. Personal holdings of cash and government bonds still total $175 billion. Over 40% of all families have $500 or more saved up.

Moreover, there should be sufficient credit available to finance appliance sales where necessary. Total consumer credit outstanding is now less than 9% of disposable income, compared with 11% in 1939. And unless more inflation turns up, the monetary authorities are likely to let credit get back to its prewar ratio.

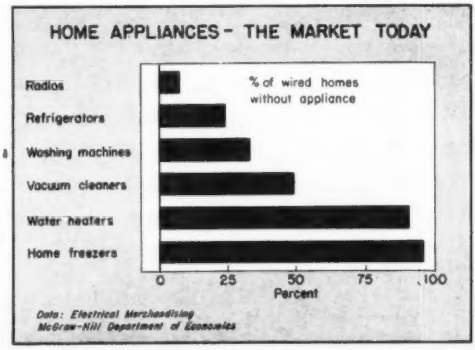
Banks have less demand for business loans than during the postwar inventory boom. So more of their funds will go into consumer loans. Stores too will be lengthening charge account terms and installment sales. Another credit development which should help appliance sales is the open-end mortgage. This lets a home owner get more credit from the original mortgage holder to make improvements or add appliances to his home.

All this points to ample buying power, unless personal incomes drop quite sharply. And this can't happen without a worse setback in business than is now in sight. Personal income should stay at or above the present level through the spring of 1950.

Not all the money will be spent for electric appliances, of course. In fact, there's no guarantee the appliance makers will get as big a share of the consumer's dollar as in recent years. There will be stiff competition from other home furnishings, automobiles, and other durables. Keeping appliance sales up will require plenty of hard selling and increasing values. Utilities will probably have to join more actively than now in the effort to sell appliances if a high level of installations is to be maintained for several years.

The right kind of sales effort has evidently been applied this fall, because appliance sales have zoomed. As October opened, temporary delivery allocations had been established on the following items: automatic toasters, roasters, electric griddles, new-type electric irons, waffle bakers, sandwich grills, hot plates, ironers, and washing machines.

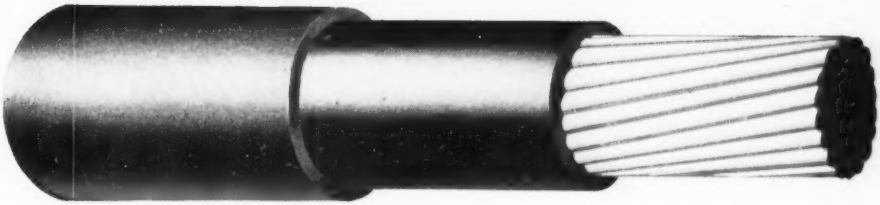
Some manufacturers have also reported order backlogs developing for refrigerators. Earlier this year this was one of the items for which the market was thought to be oversold. But easier financing terms and the hot weather evidently combined to bring on a late rush of buying. There's some evidence that the seasonal pattern of refrigerator sales has changed, with more units being installed in the later months of the year.



Famous since 1932...

Better than ever Today

Time-tested since 1932 under all service conditions, subsequent improvements provide additional security in this long-famous network cable.



ANW
Anaconda Net Work

Tough, easily handled, Type ANW-insulated, neoprene-jacketed cable incorporates six important advantages . . . important to you for underground duct installation.

1. Better heat and flame resistance—protected by the same neoprene jacket as Anaconda mining cables which must and do meet the severe flame test of the U.S. Bureau of Mines.

2. Higher resistance to duct acids and alkalies—years of experience with Type ANW insulation with only a braid covering showed it to be highly resistant to oils, acids and alkalies encountered in soil and sewage waters. NOW it has the additional protection of the neoprene jacket which itself has shown by test and experience, excellent resistance to these agents of destruction.

3. Higher operating temperature—now 75 C copper temperature, continuous duty.

4. Superior aging—Type ANW insulation has demonstrated year after year . . . and now even better . . . long-aging characteristics under severe oxygen bomb and air bomb tests.

5. Low moisture absorption—Type ANW insulation has always had low moisture absorption . . . far less than is detrimental to safe operation.

6. More easily handled—passes 180 degree cold-bend test at 0° C without damage to jacket. Cable is lighter, easier to pull. No lead to fuse, insulation and jacket do not support combustion.

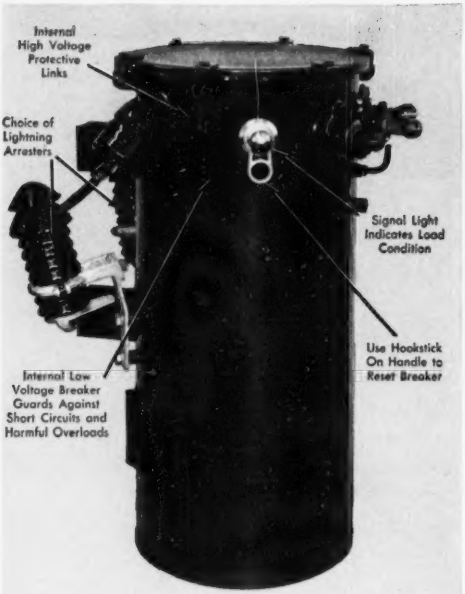
49443

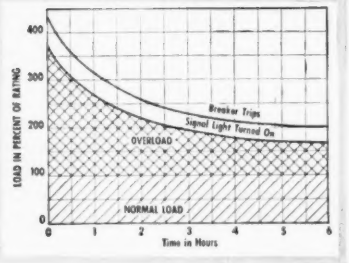
ANACONDA

ANACONDA WIRE & CABLE COMPANY

25 Broadway, New York 4, N. Y.

HERE'S *Premium* TRANSFORMER PROTECTION


Internal High Voltage Protective Links
Choice of Lightning Arresters
Signal Light Indicates Load Condition
Use Hookstick On Handle to Reset Breaker
Internal Low Voltage Breaker Guards Against Short Circuits and Harmful Overloads



Useful capacity of ACP transformer is increased with secondary breaker, actuated by either or both load current and oil temperature.

New ACP* (*Allis-Chalmers Protected) Transformers Give You...

- ✓ FULL ELECTRICAL PROTECTION
- ✓ MORE EFFICIENT LOADING
- ✓ SIGNAL LIGHT INDICATION
- ✓ GREATER SERVICE CONTINUITY

ONE OF THE BEST investments you can make is to be *sure* of maximum transformer protection against electrical damage... especially in concentrated load areas where service continuity is highly important. You can get this protection by specifying Allis-Chalmers ACP* transformers.

With these units, much of the normally unused safety margin capacity now becomes part of the actual transformer range, permitting loading much closer to the actual limit of the windings. Result — more kva output per kva transformer rating. Secondary breaker which is actuated by *either or both load current and oil temperature* protects against both sustained and short time overloads.

For additional information about *premium* ACP* protection —or other Allis-Chalmers protective transformer arrangements — contact your nearby A-C sales office, or write direct.

A-2834

ALLIS-CHALMERS, 932A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS